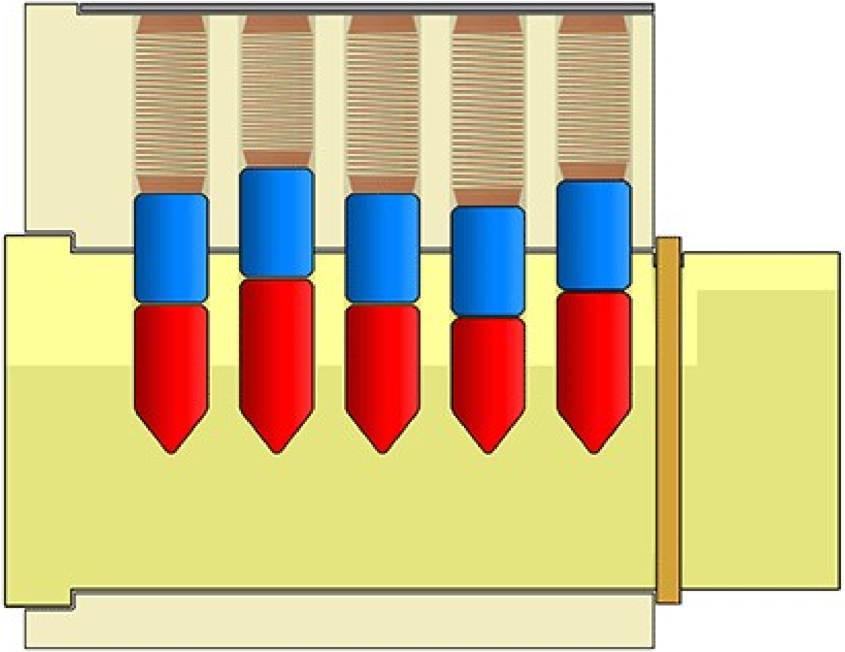
Wait! Before you begin, does this

... look like this text?

If it does NOT then you don't have the right font installed.
Fix that before you start!

download the Acid font here, or visit http://toool.us/logo

Lockpick



Pins

Wafer

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Comb

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Bump

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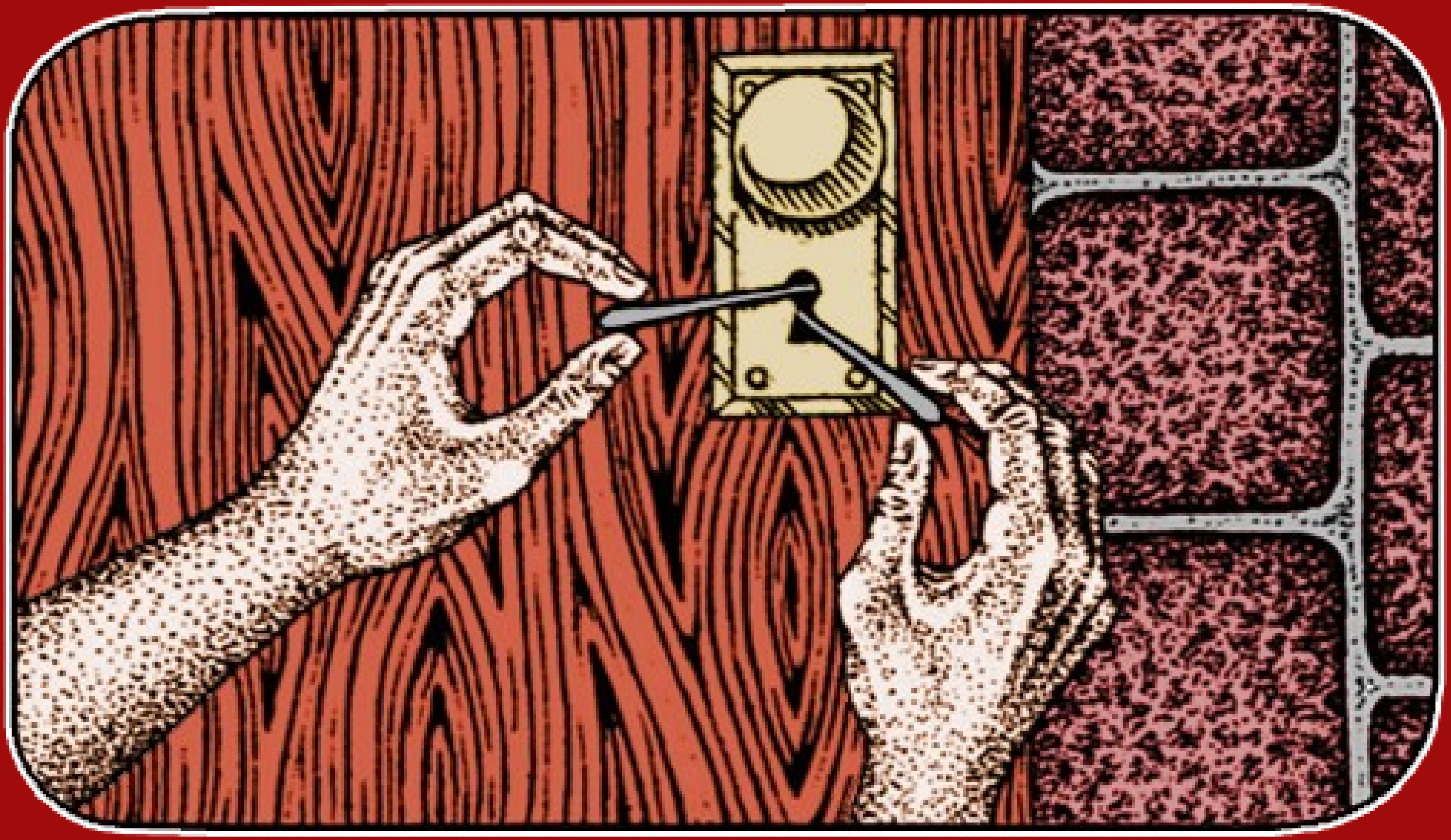
Impre

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Maste

The Open Organisation Of Lockpickers

Why do Locks Matter?



Locks Hold a Special Place in Our Lives



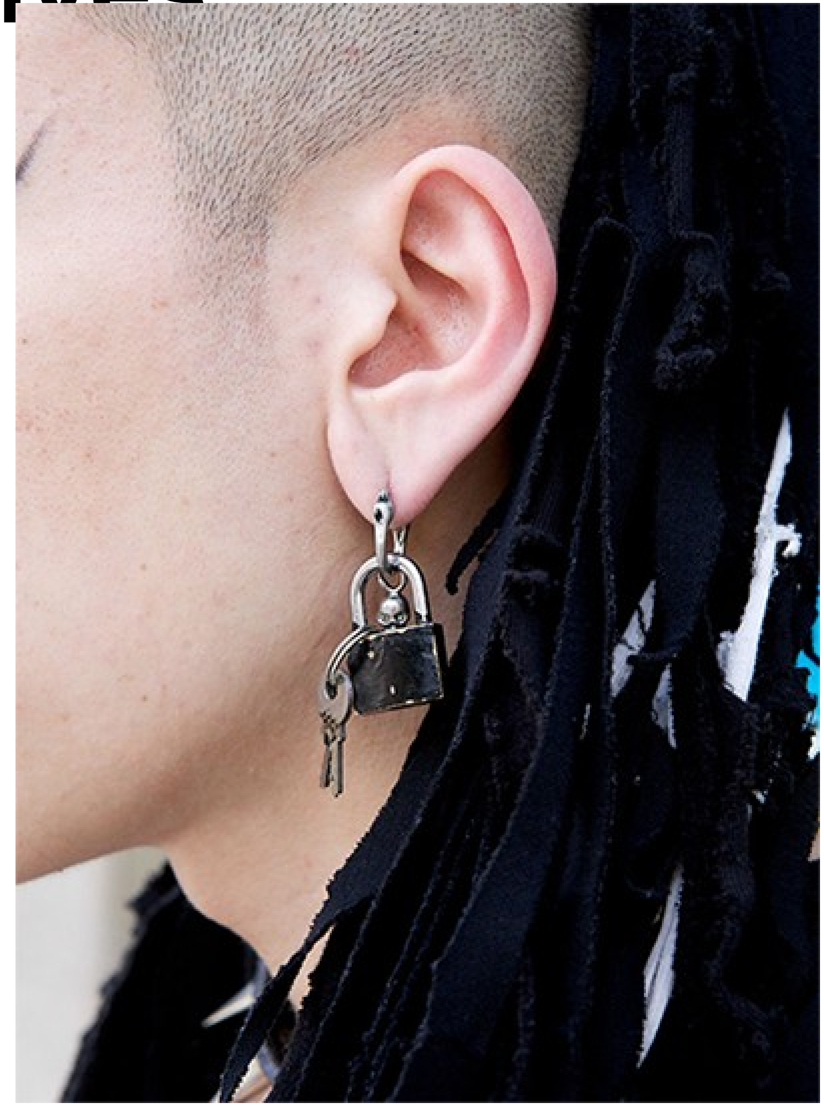
Locks Hold a Special Place in Our Lives



Locks Hold a Special Place in Our Lives



Locks Hold a Special Place in Our Lives





“What Does a Lock Signify?”

(Schuyler Tow



“What Does a Lock Signify?”

(Schuyler Towne at BVAcon 2012)



“What Does a Lock Signify?”

(Schuyler Towne at RVAsec 2013)



“What Does a Lock Signify?”

(Schuyler Towne at RVAsec 2013)

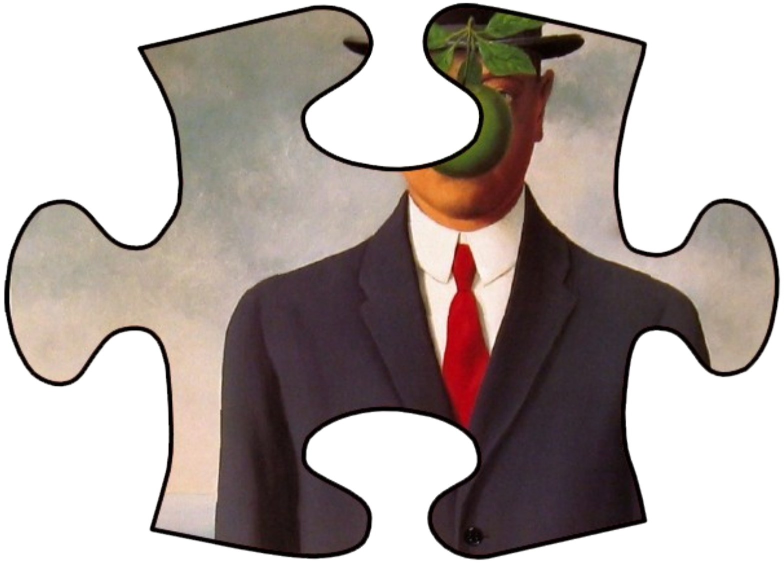


“What Does a Lock Signify?”

(Schuyler Tow

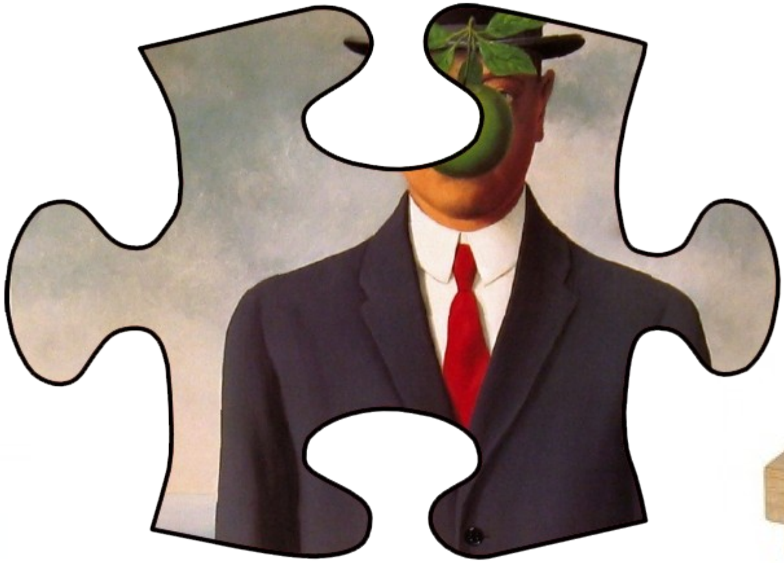


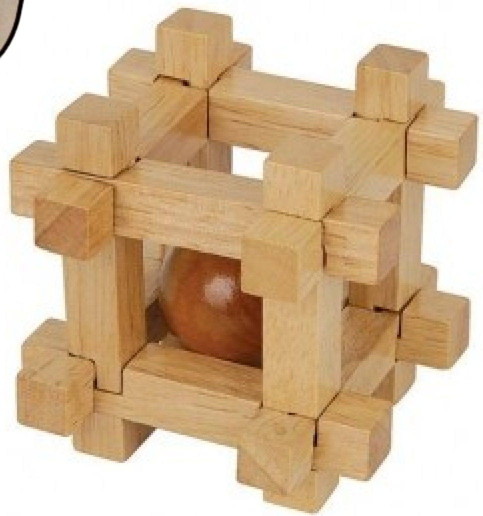
Puzzles



Puzzles



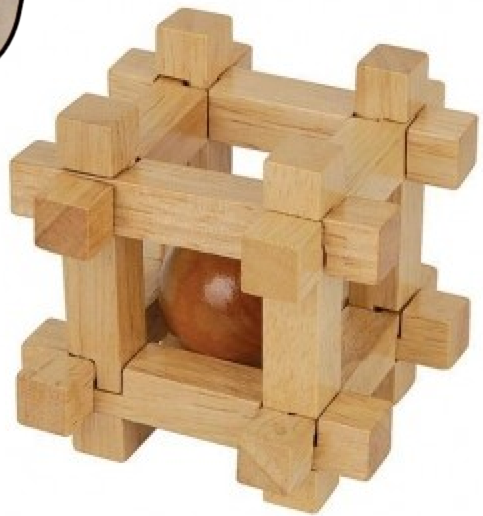




Puzzles









Lockpicking is fun puzzle solving for us













Try your hand at Lockpicking Games



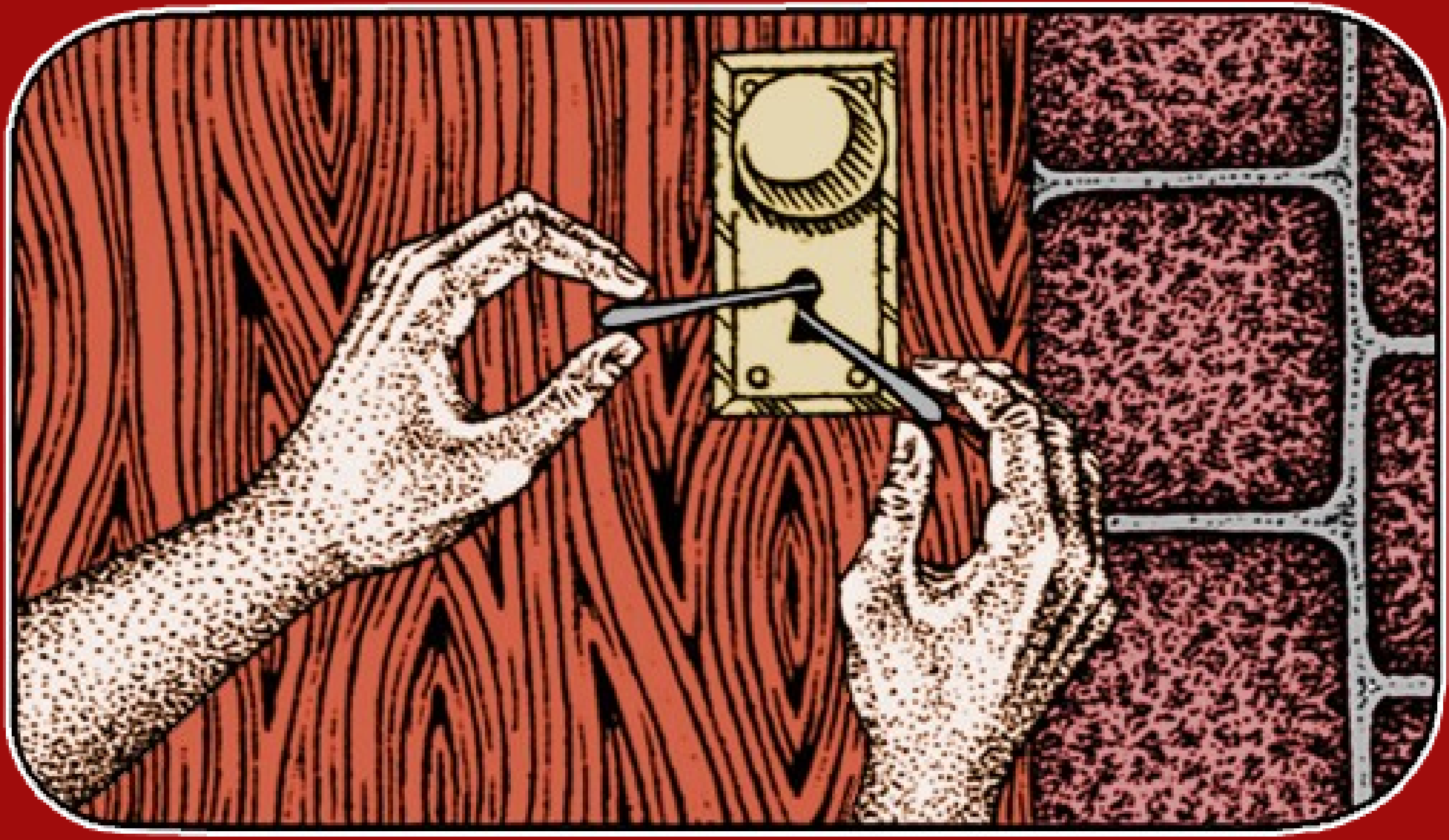
... Win Fabulous Prizes and Become Famous!



The Competition Can Get Serious



Intro to Lockpicking



First, a word about rules…

Yes, we have rules.

1. Do not pick locks which you do not own.

2. Do not pick locks upon which you rely.

The Three Kinds of Lock-Opening



The Three Kinds of Lock-Opening

1. Lockpicking

The Three Kinds of Lock-Opening

1. Lockpicking

2. Quick & Dirty

The Three Kinds of Lock-Opening

1. Lockpicking

2. Quick & Dirty

3. Covert & High-Tech

what spies do

The Three Kinds of Lock-Opening

1. **Lockpicking** – what we do
2. **Quick & Dirty** – what criminals do
3. **Covert & High-Tech** –

The Three Kinds of Lock-Opening

1. **Lockpicking** – what we do

   TOOOL provides the knowledge and the means

2. **Quick & Dirty** – what criminals do

   TOOOL provides knowledge. . . but no means

3. **Covert & High-Tech** –

Lockpicking is Easy!



Pin Tumbler Locks



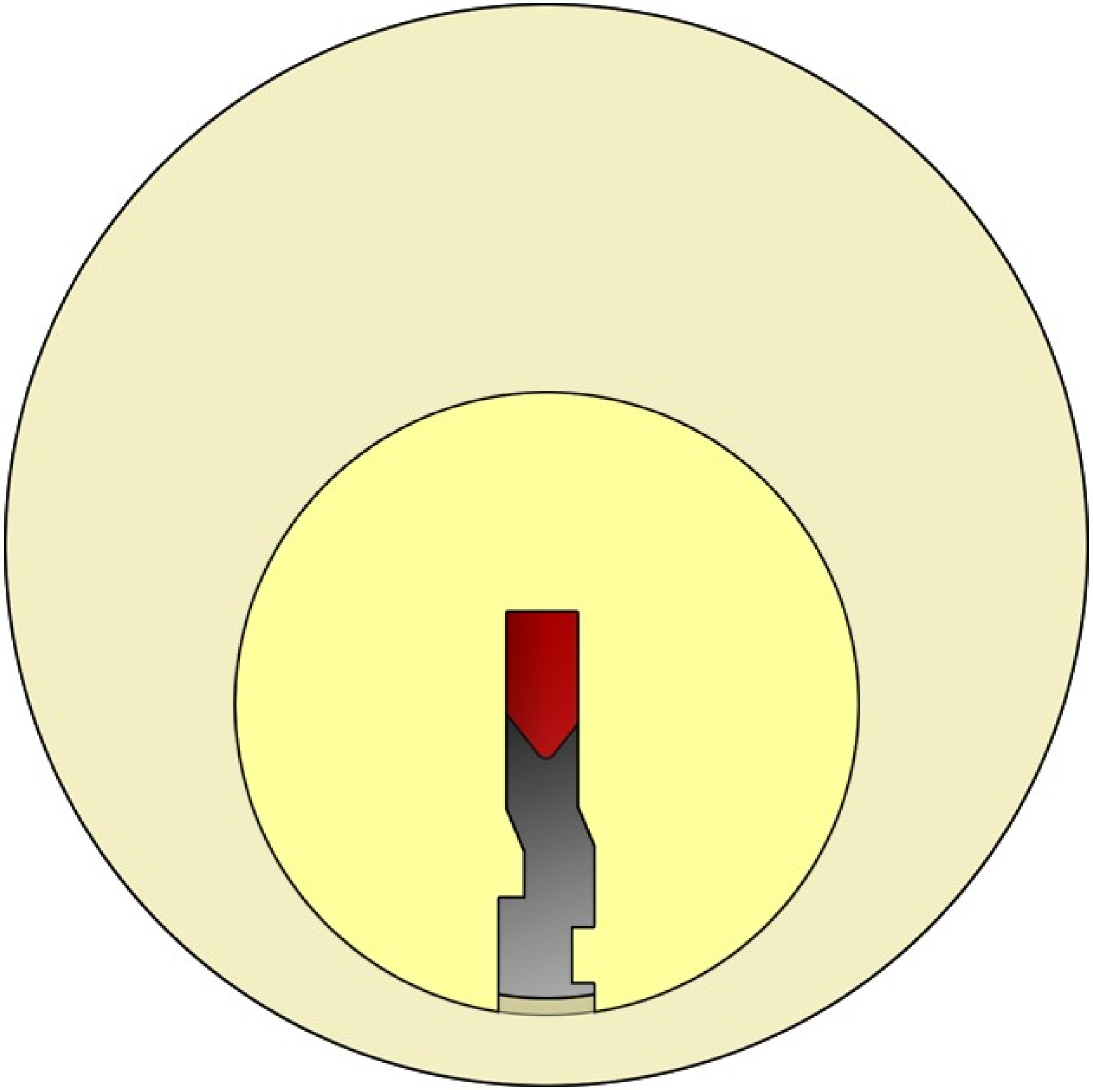
Pin Tumbler Locks



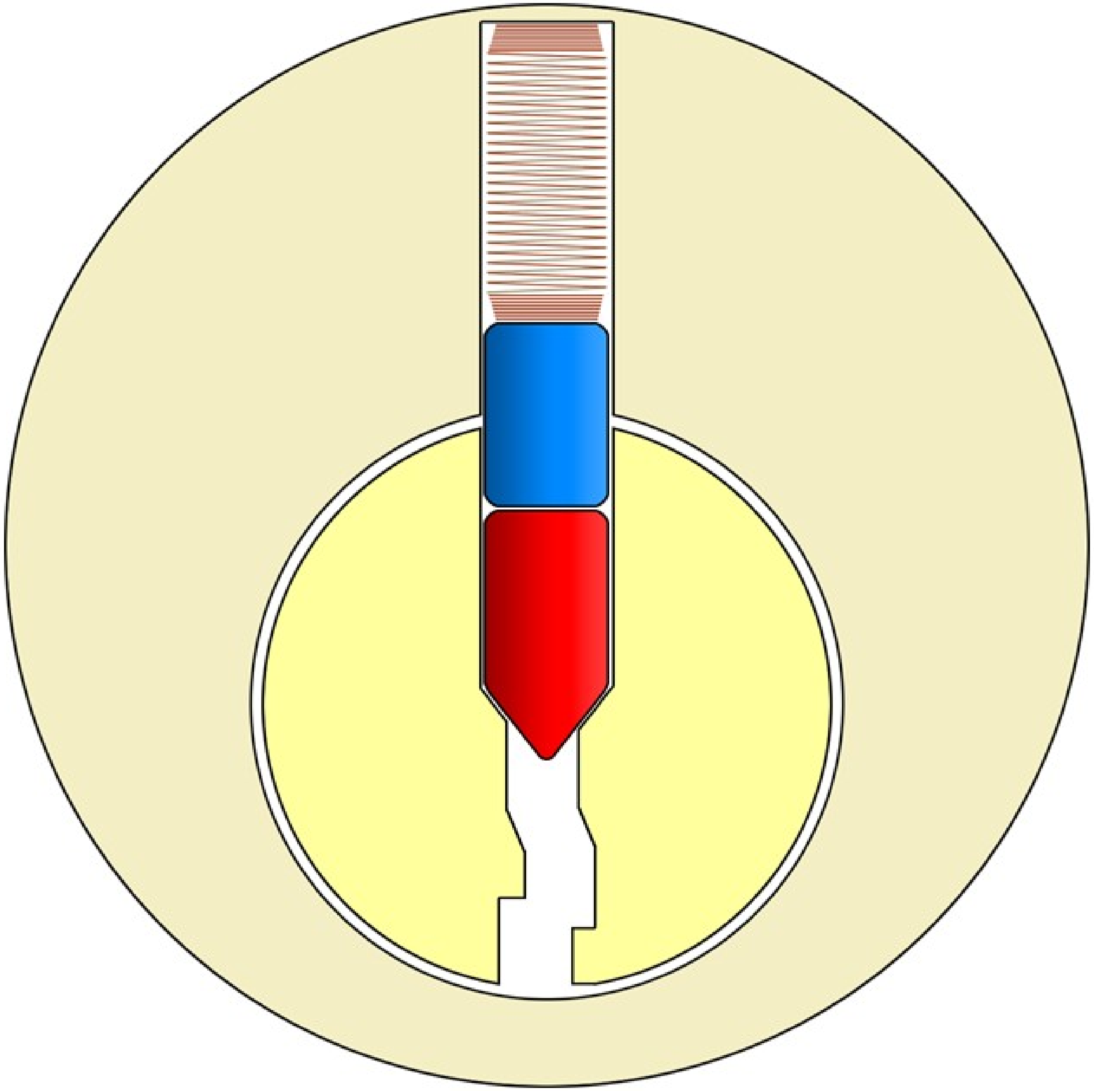
Pin Tumbler Locks



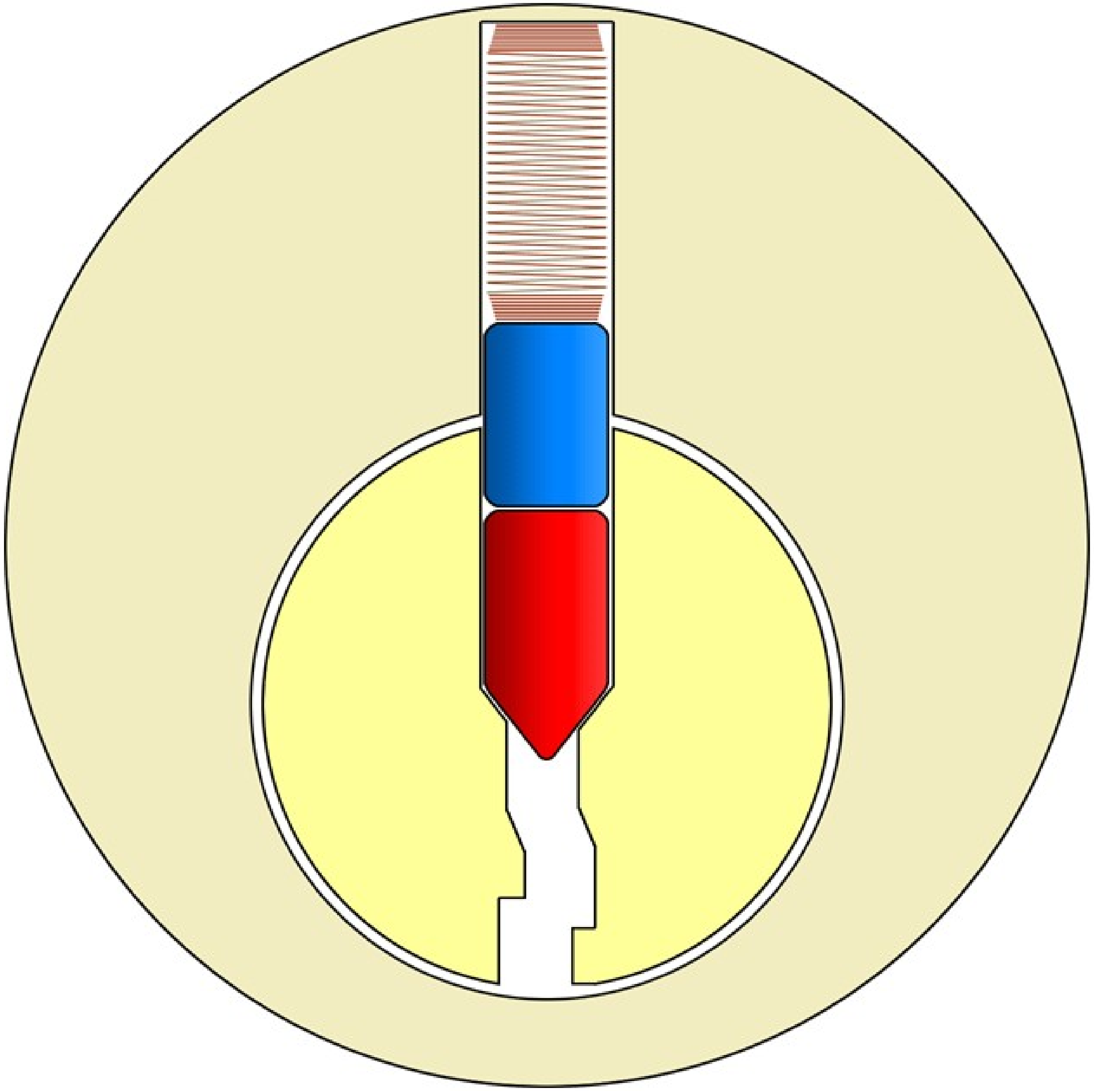
Outer View



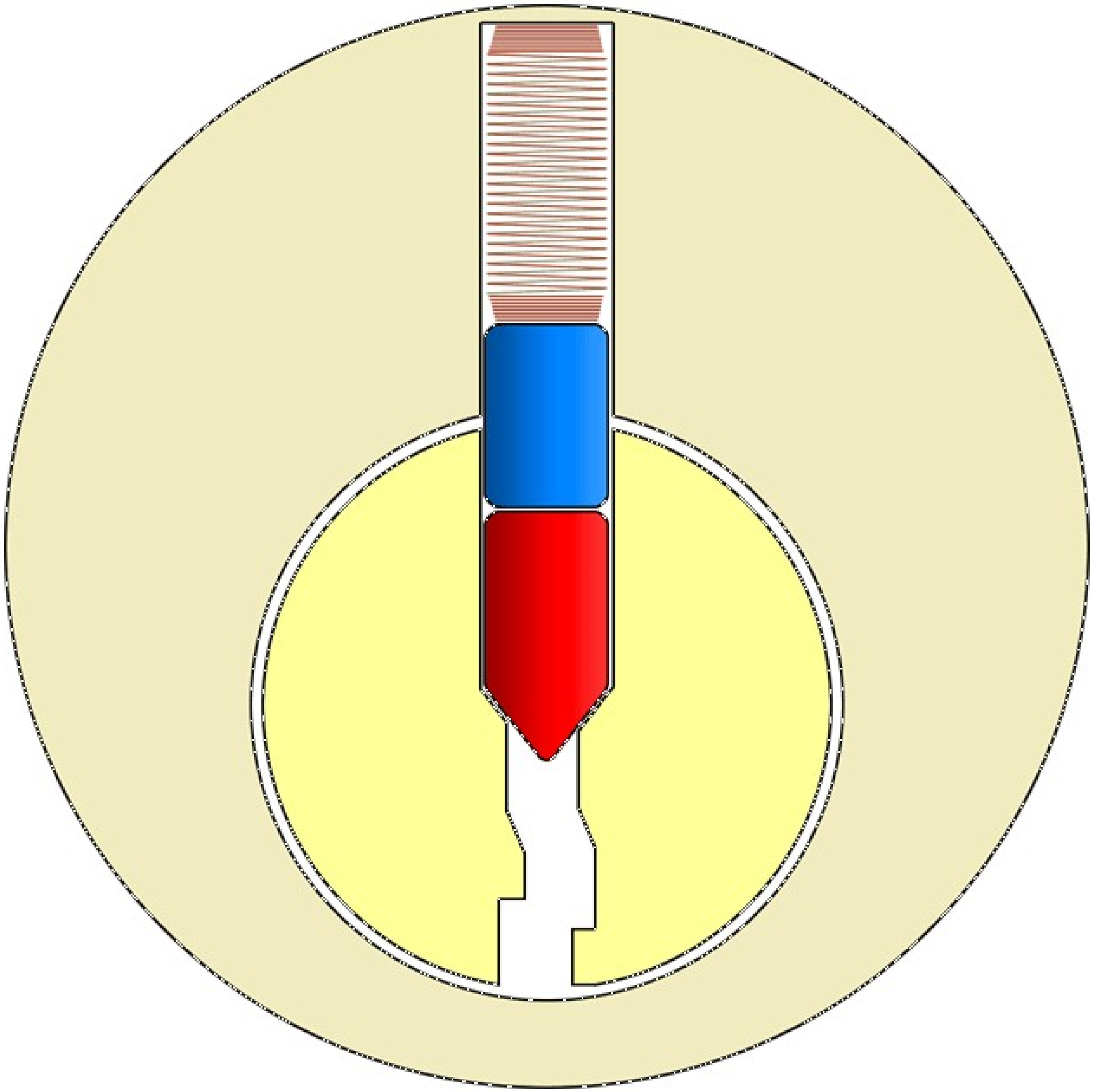
Inner View



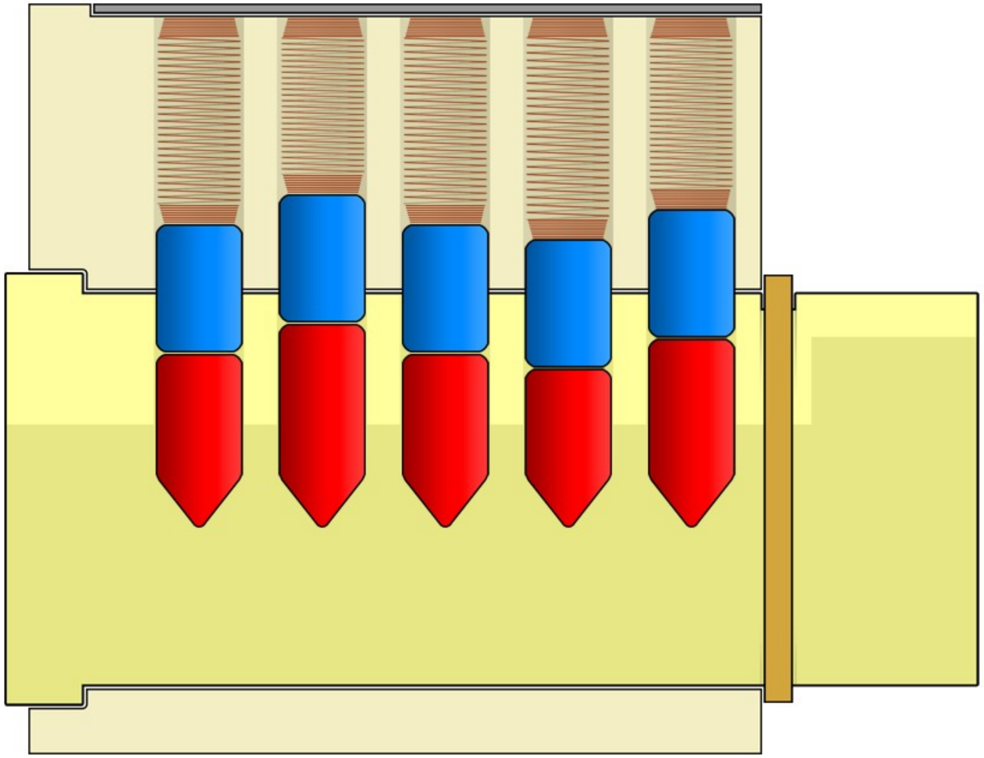
Attempt Without a Key



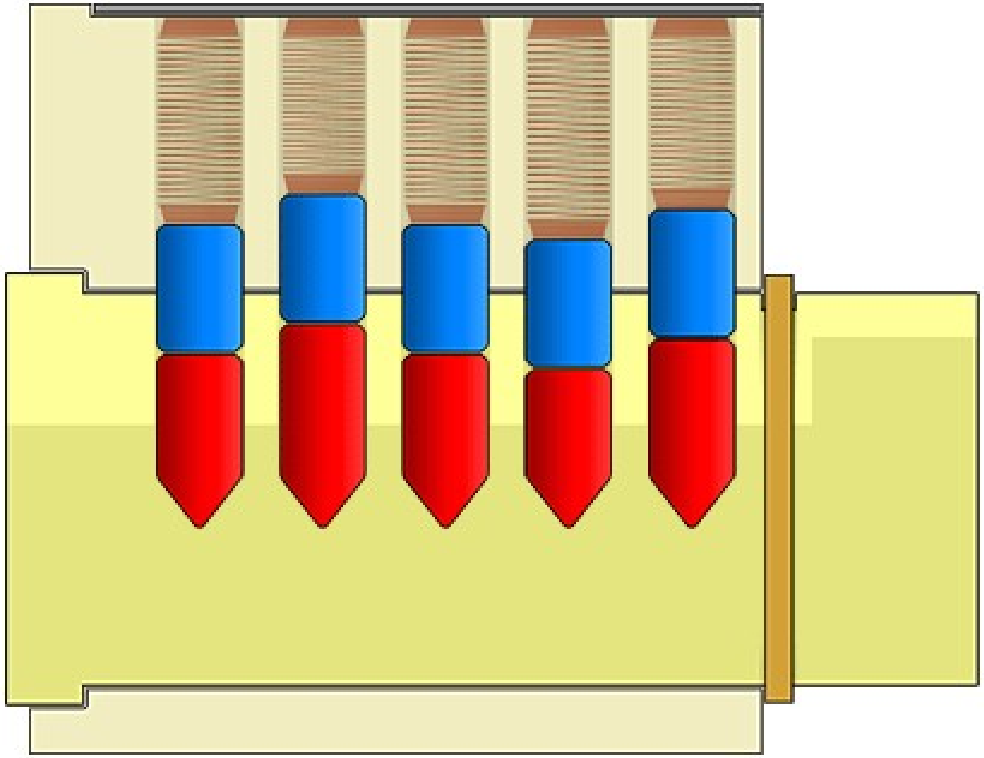
Operating With a Key



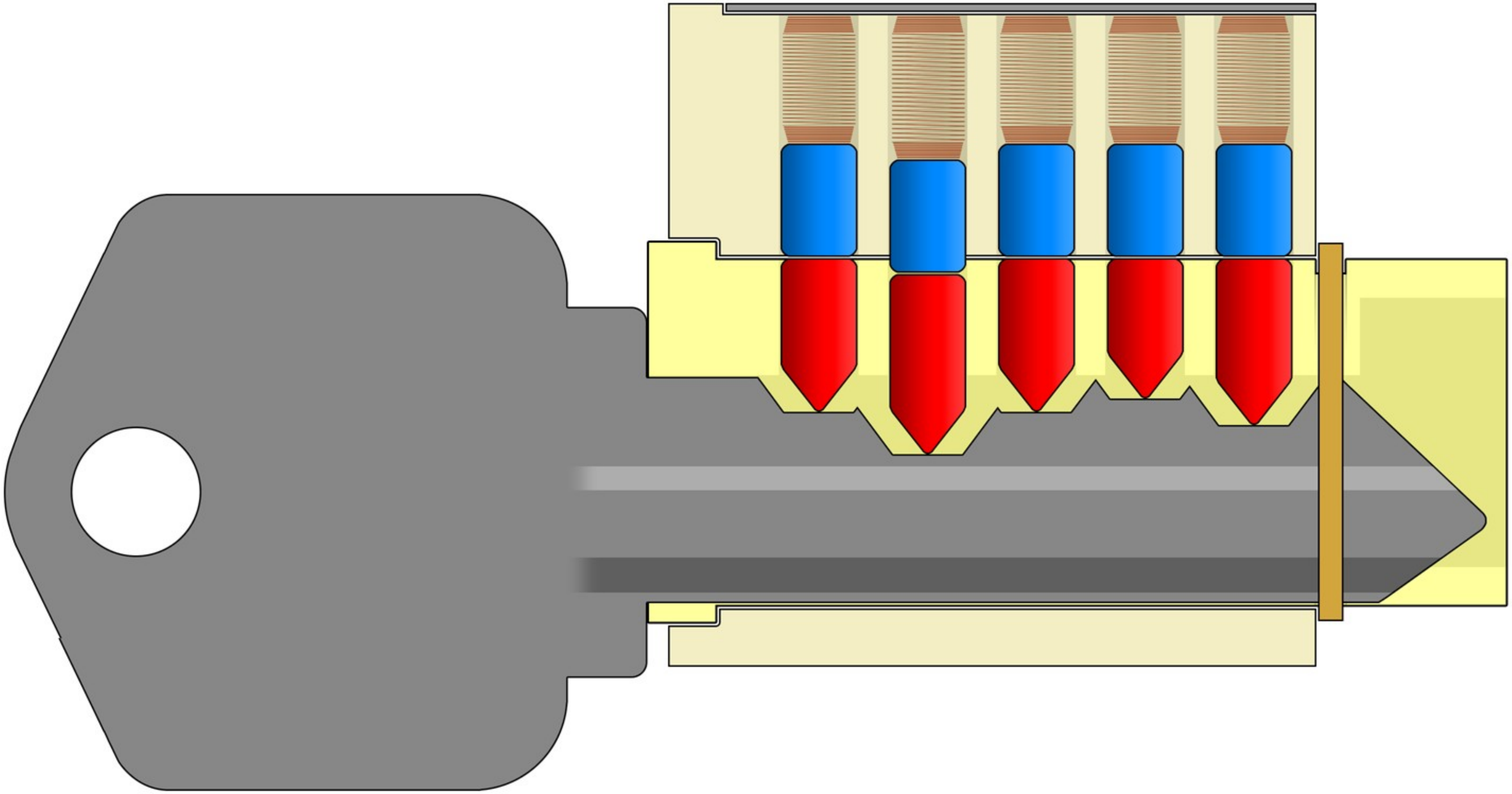
Pin Stacks



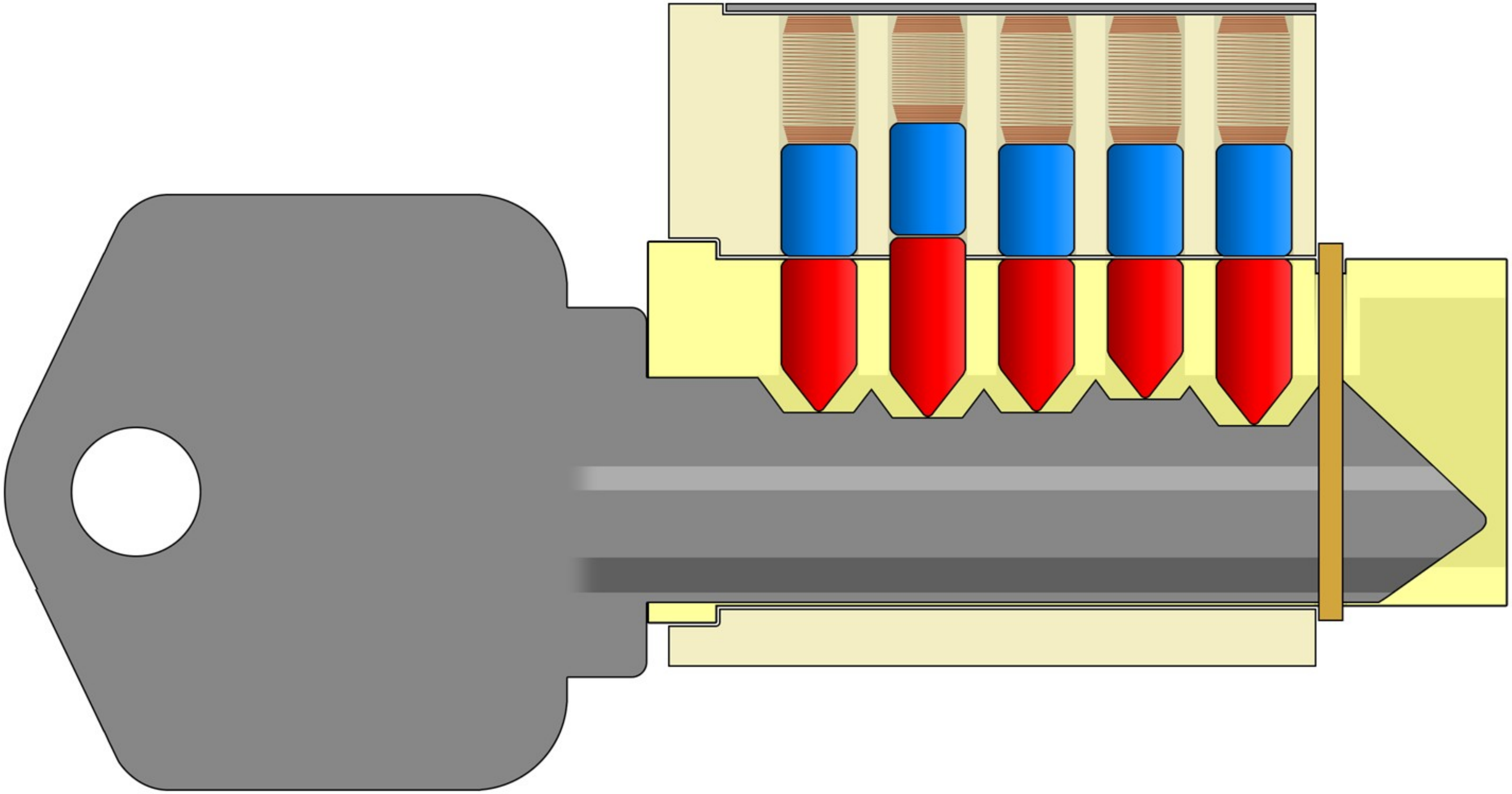
Key Operation



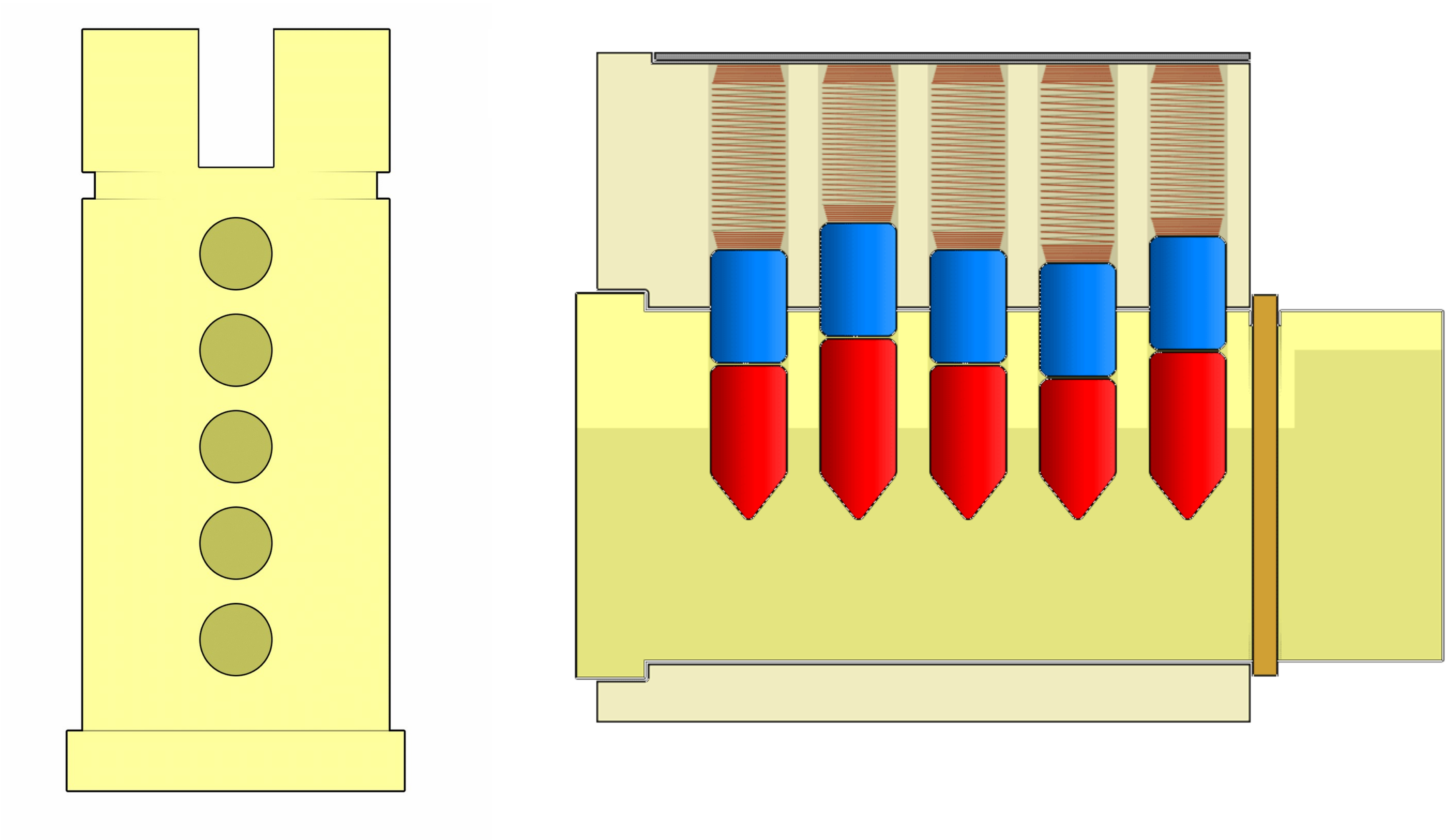
One Bitting Too Low



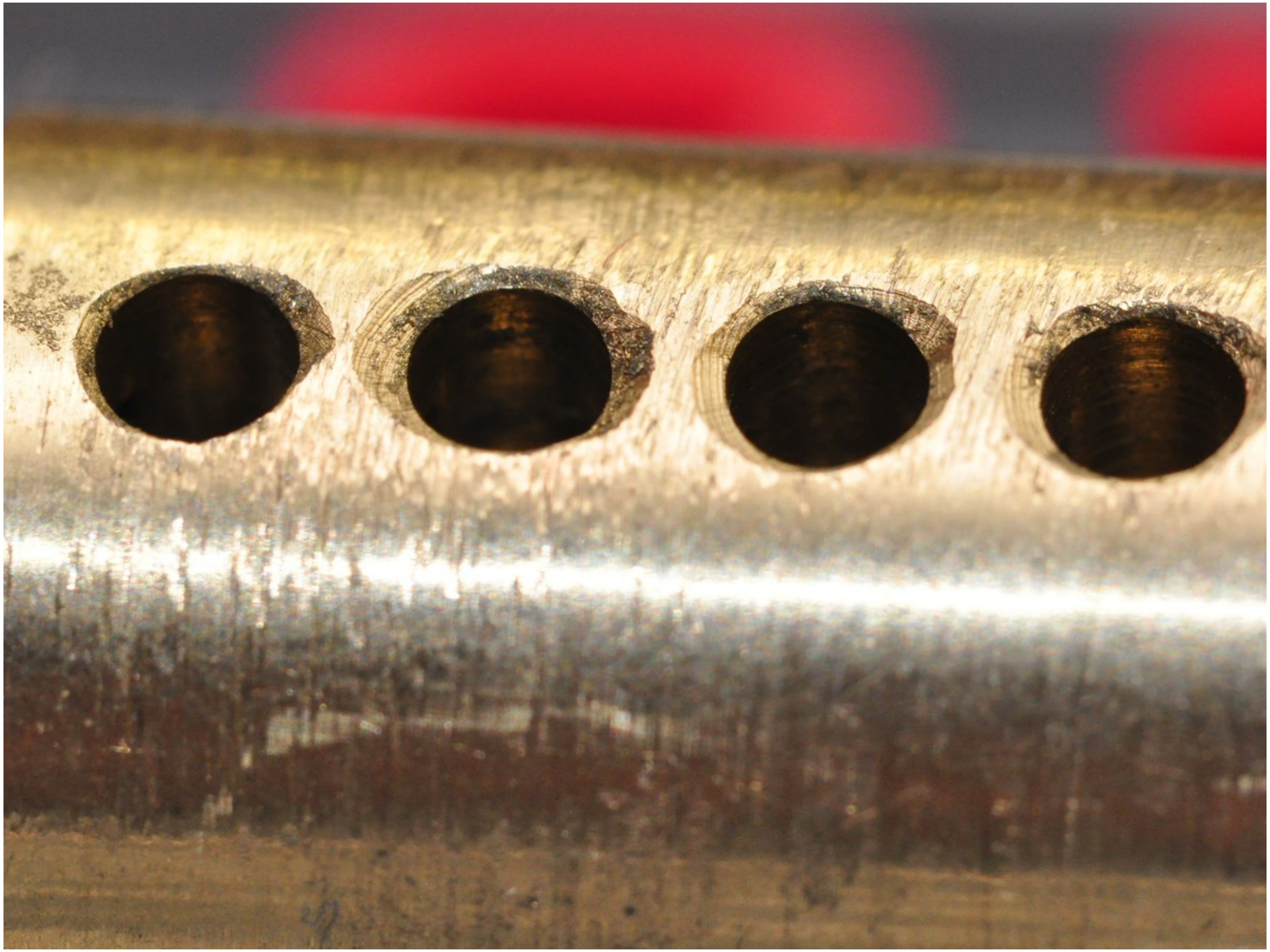
One Bitting Too High



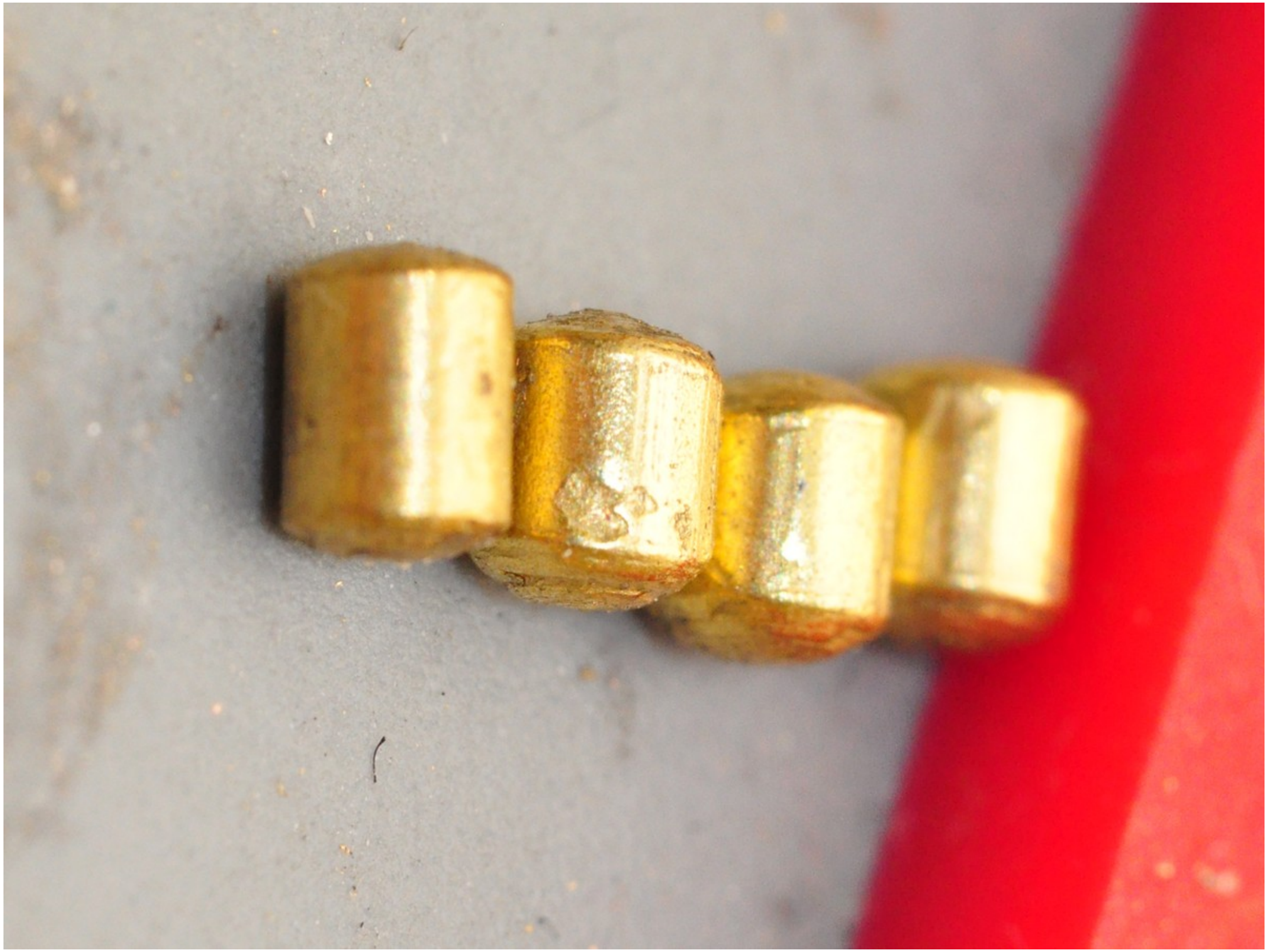
In a Perfect World



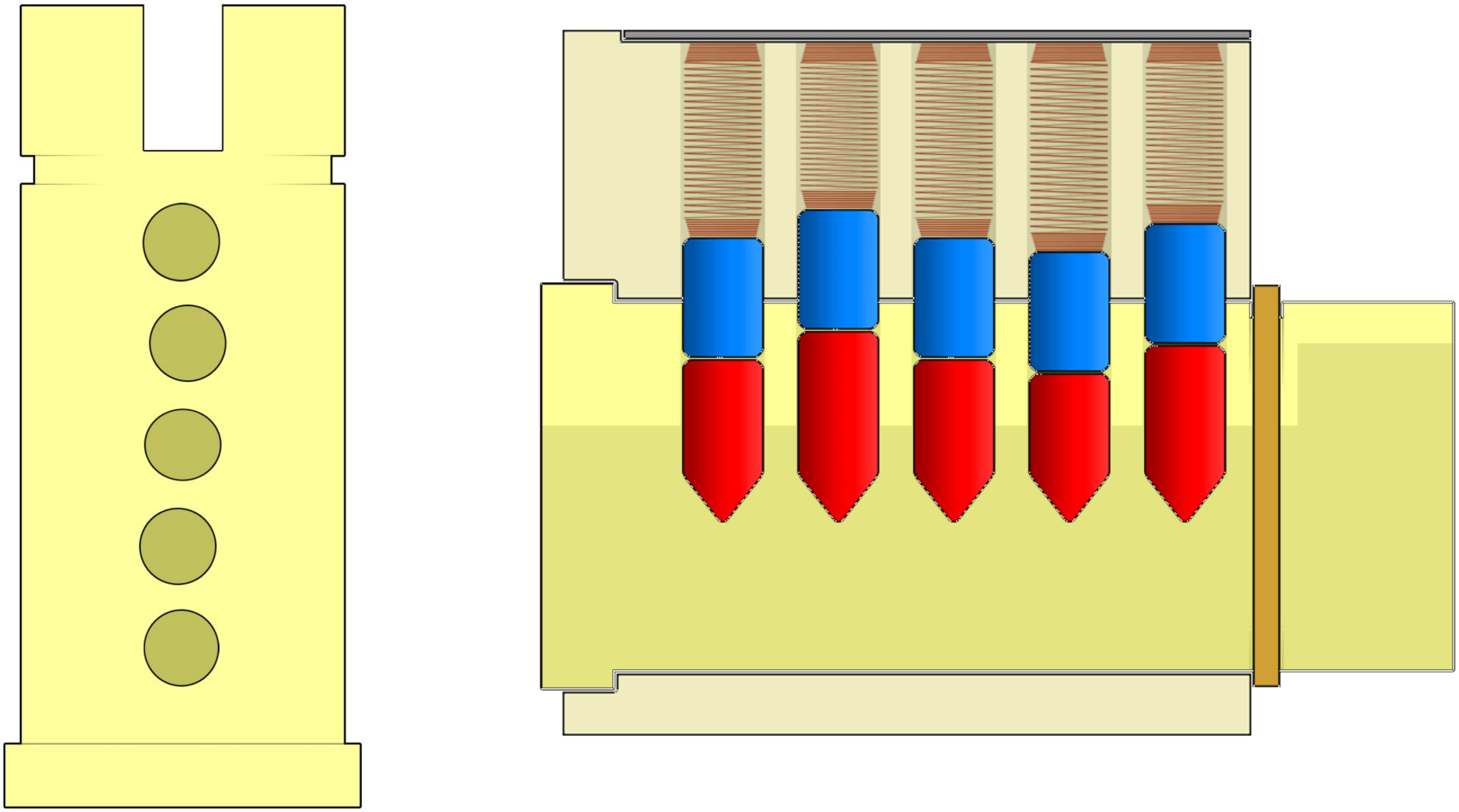
In the Real World



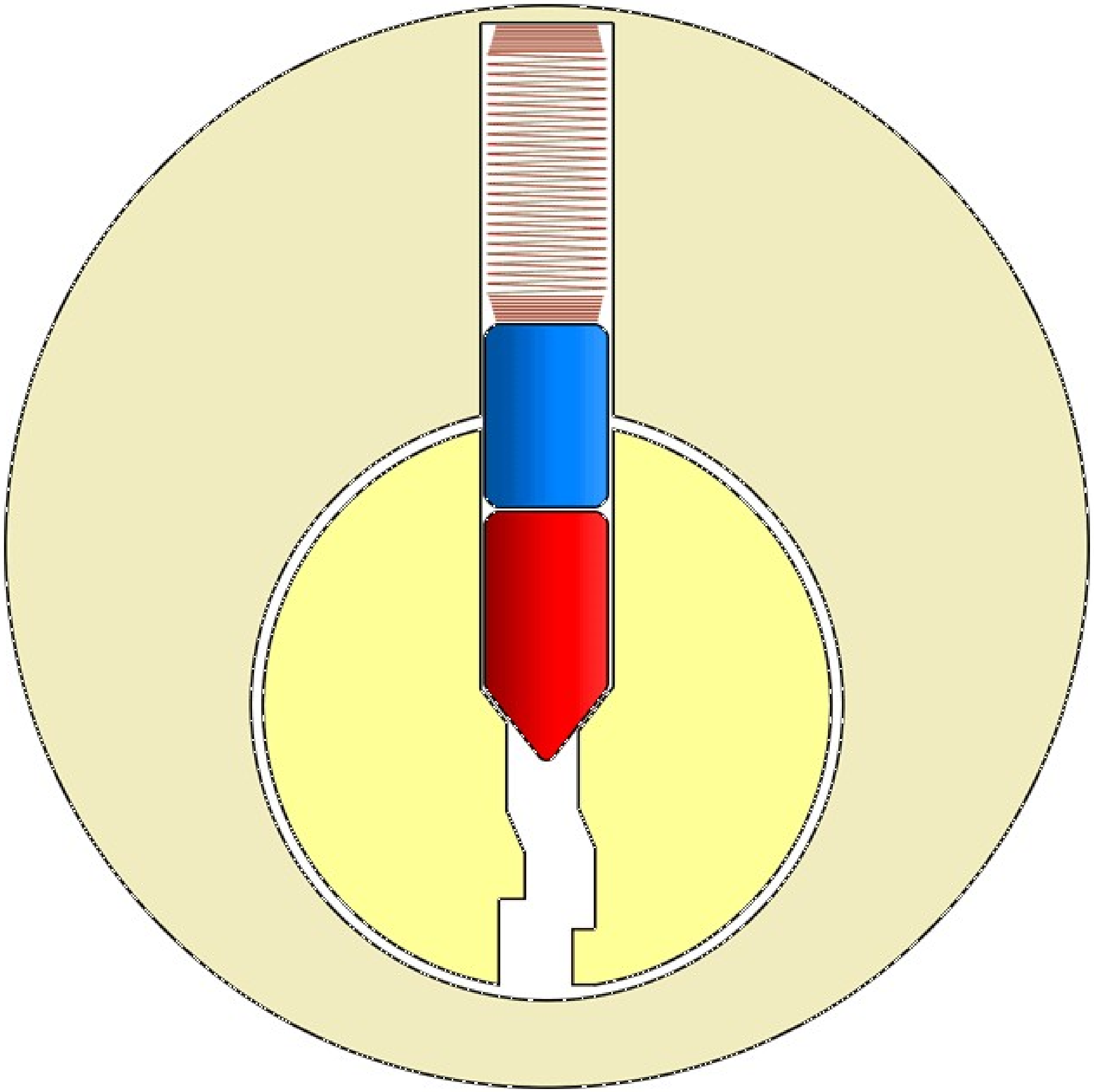
In the Real World



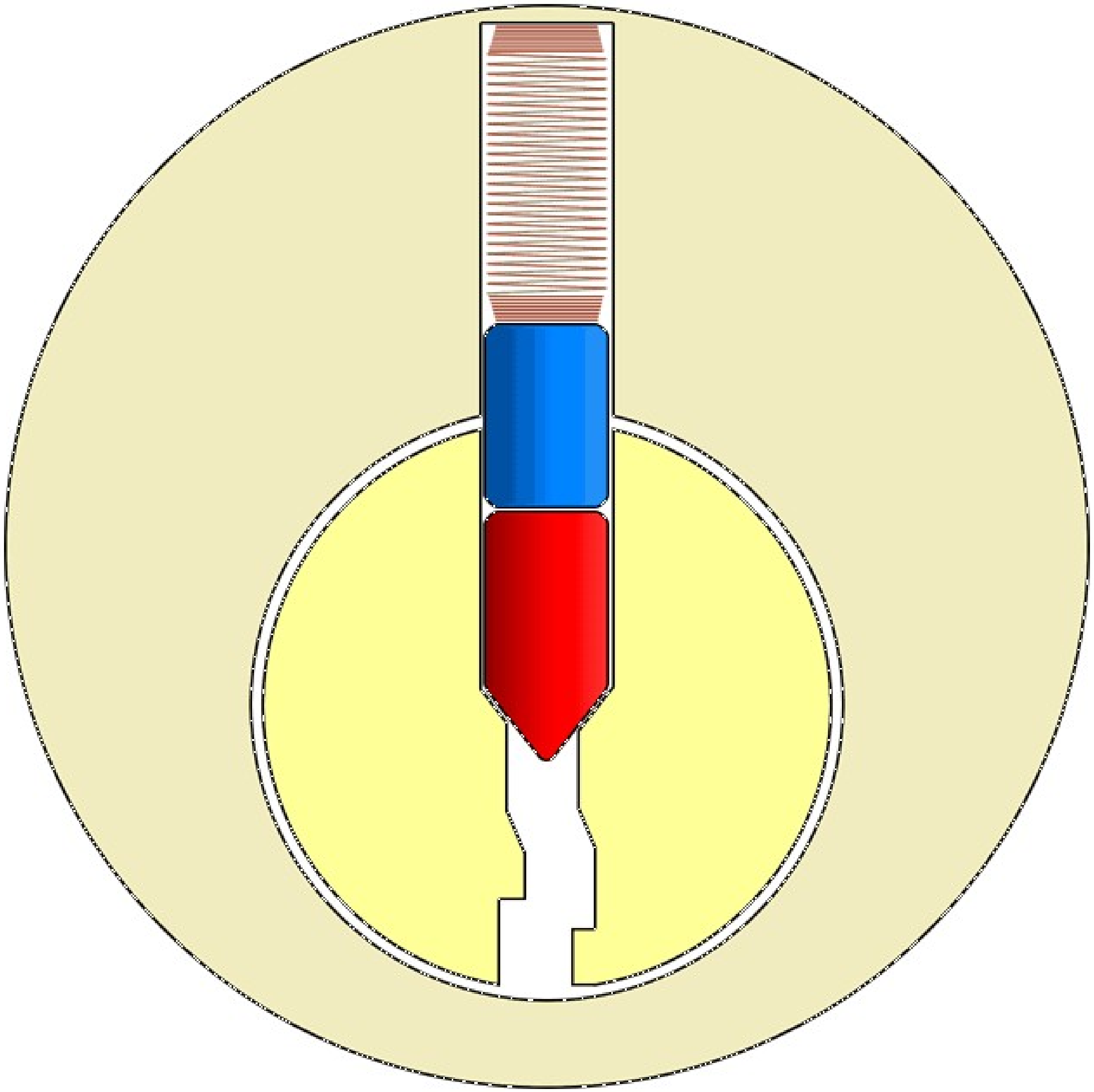
In the Real World



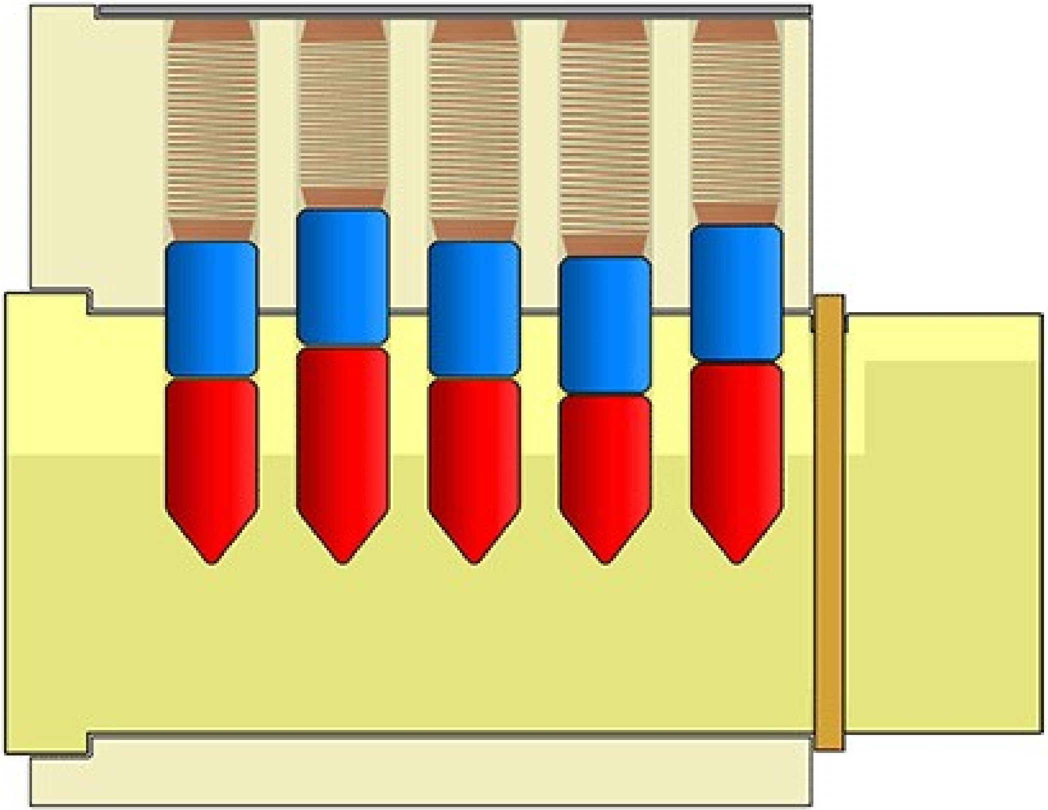
“Setting” a Binding Pin



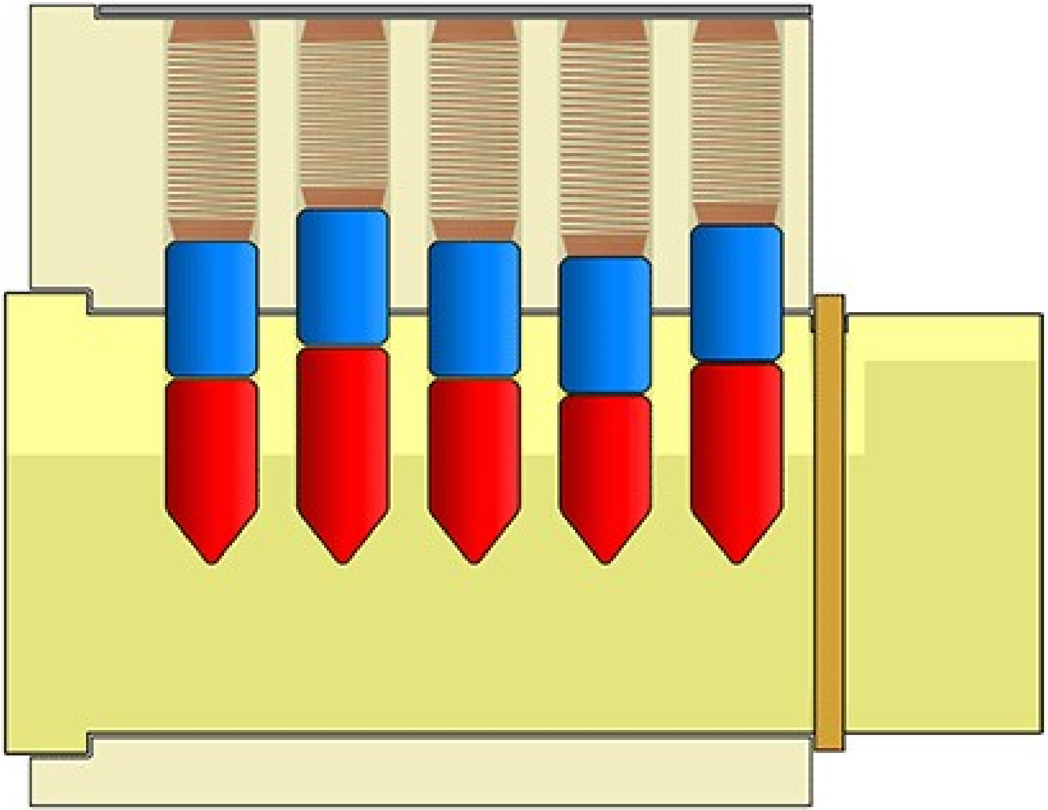
The Key Pin Can Still Move Freely



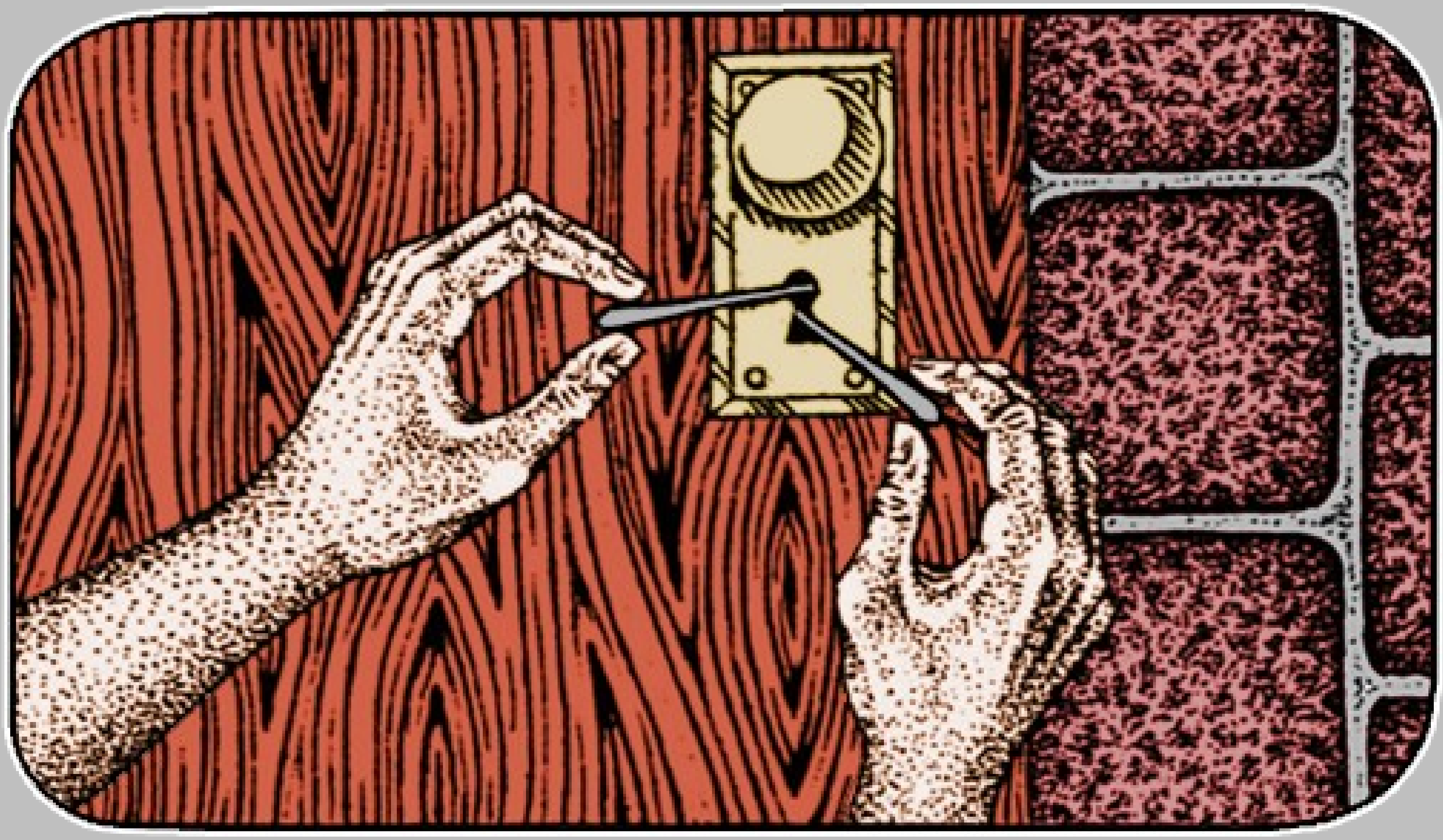
Setting Multiple Pins



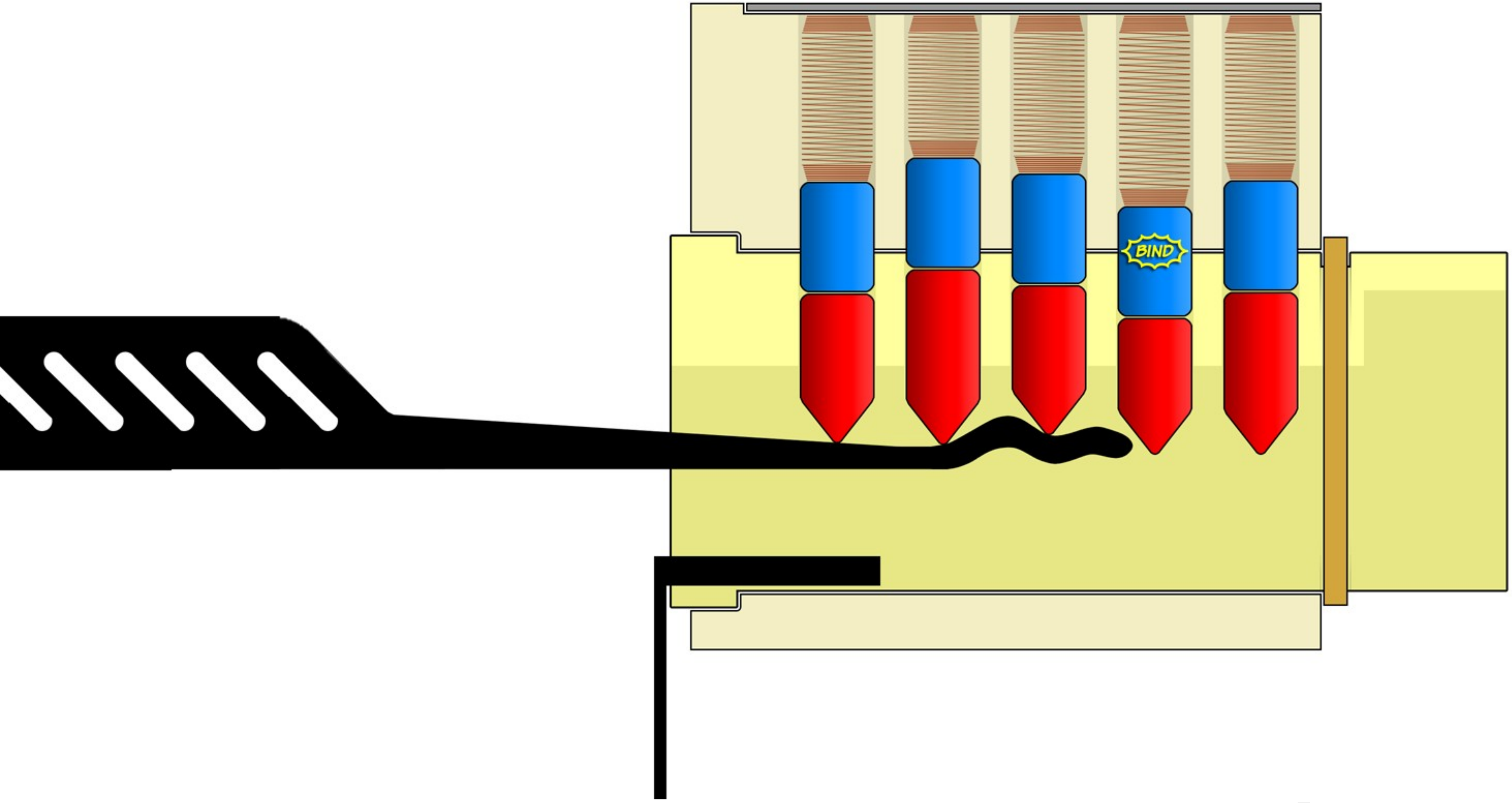
Take Caution to Avoid Over-Lifting



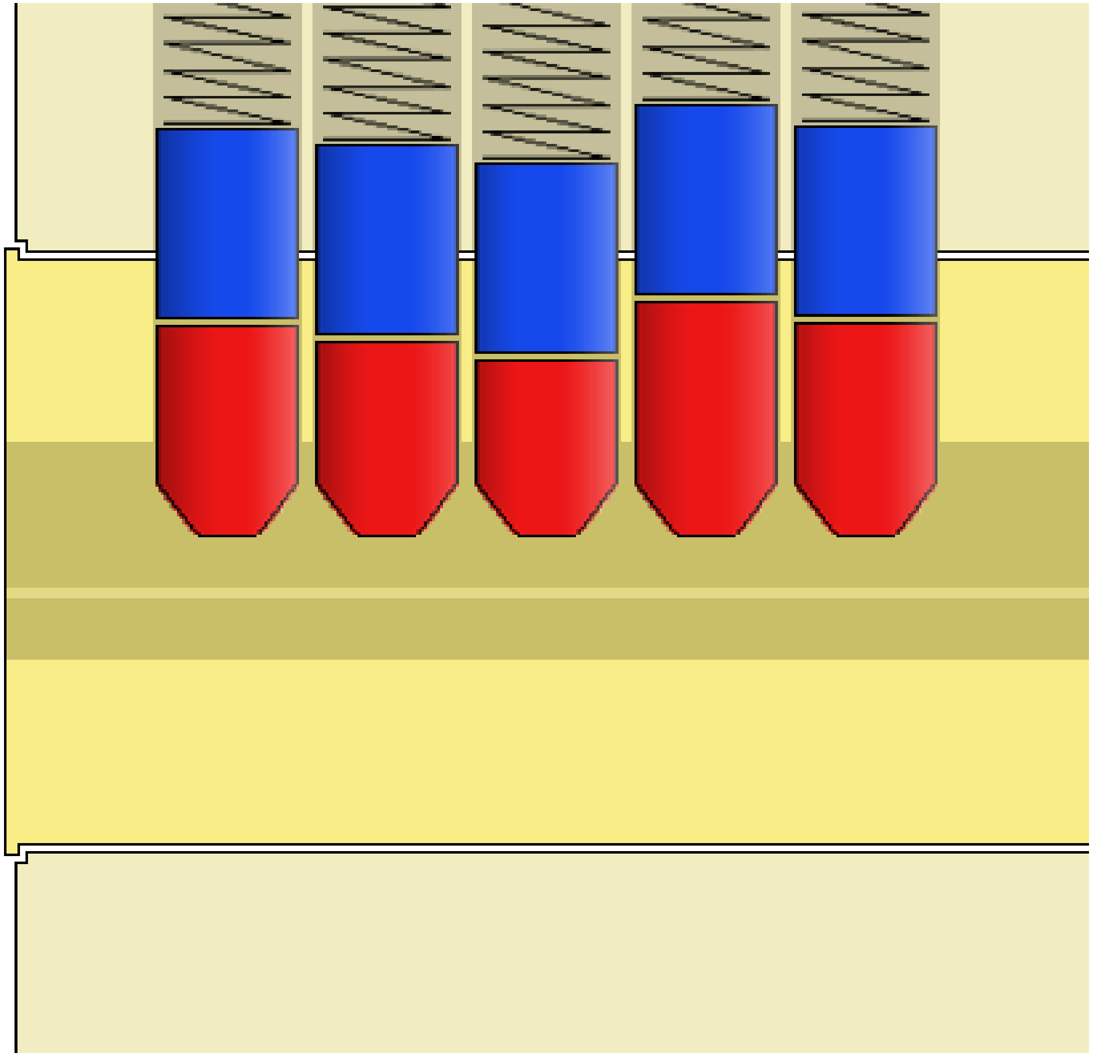
Other Tools One Uses



Raking



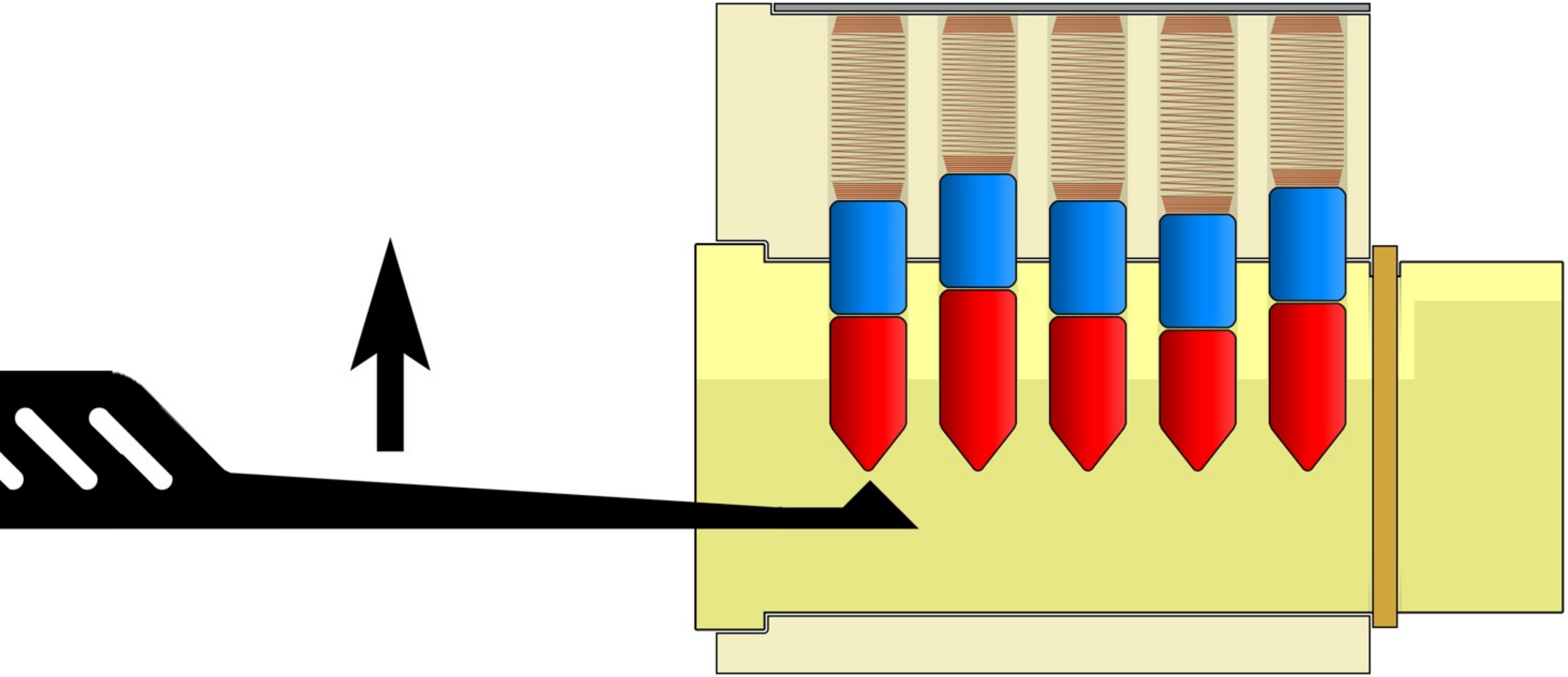
Raking



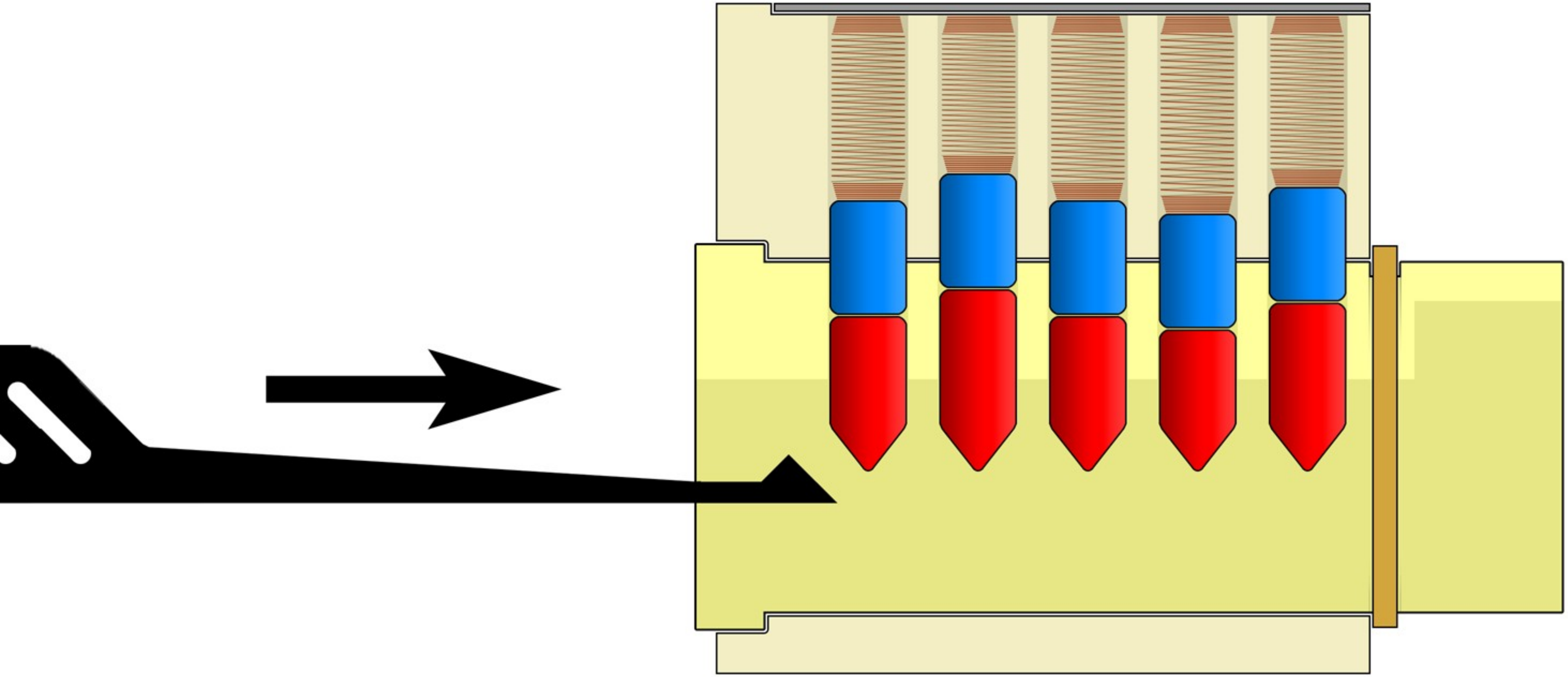
The Half-Diamond



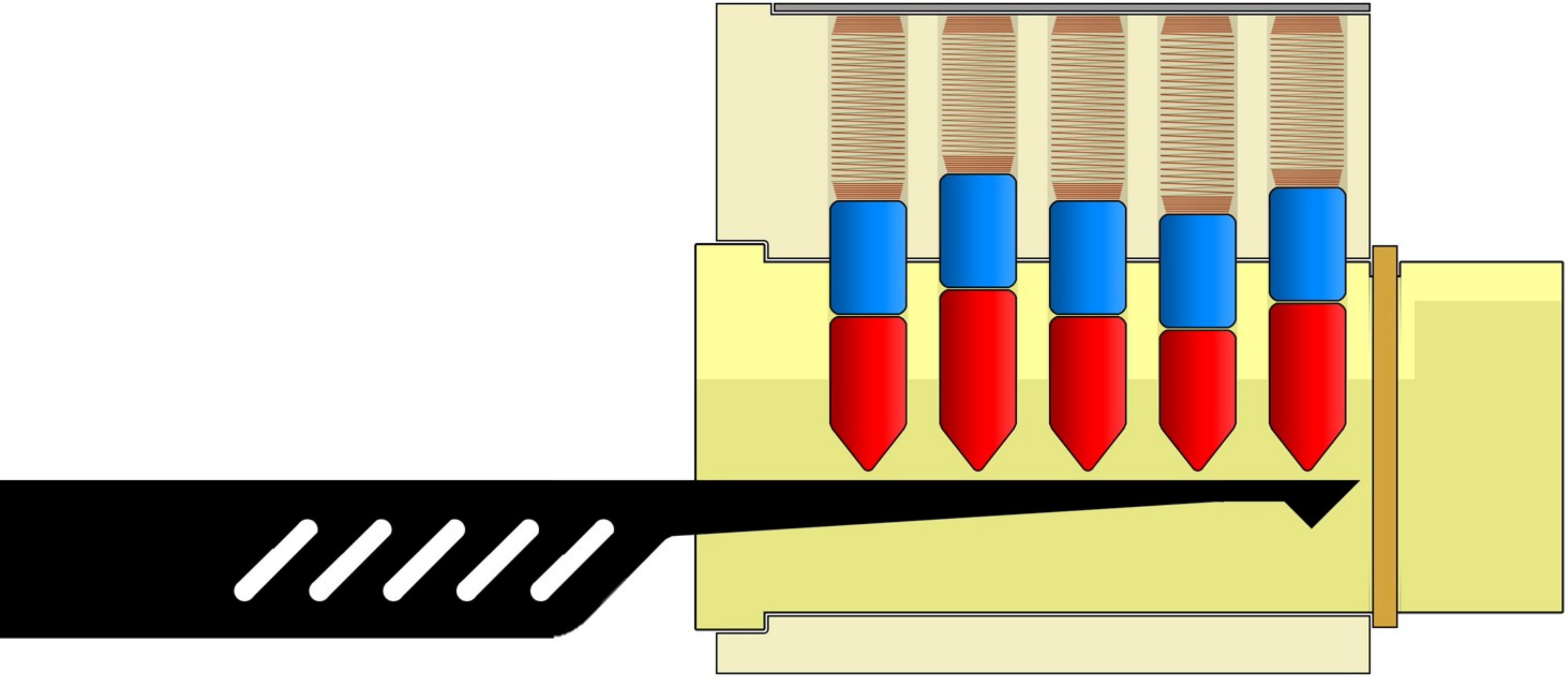
Lifting with a Half-Diamond



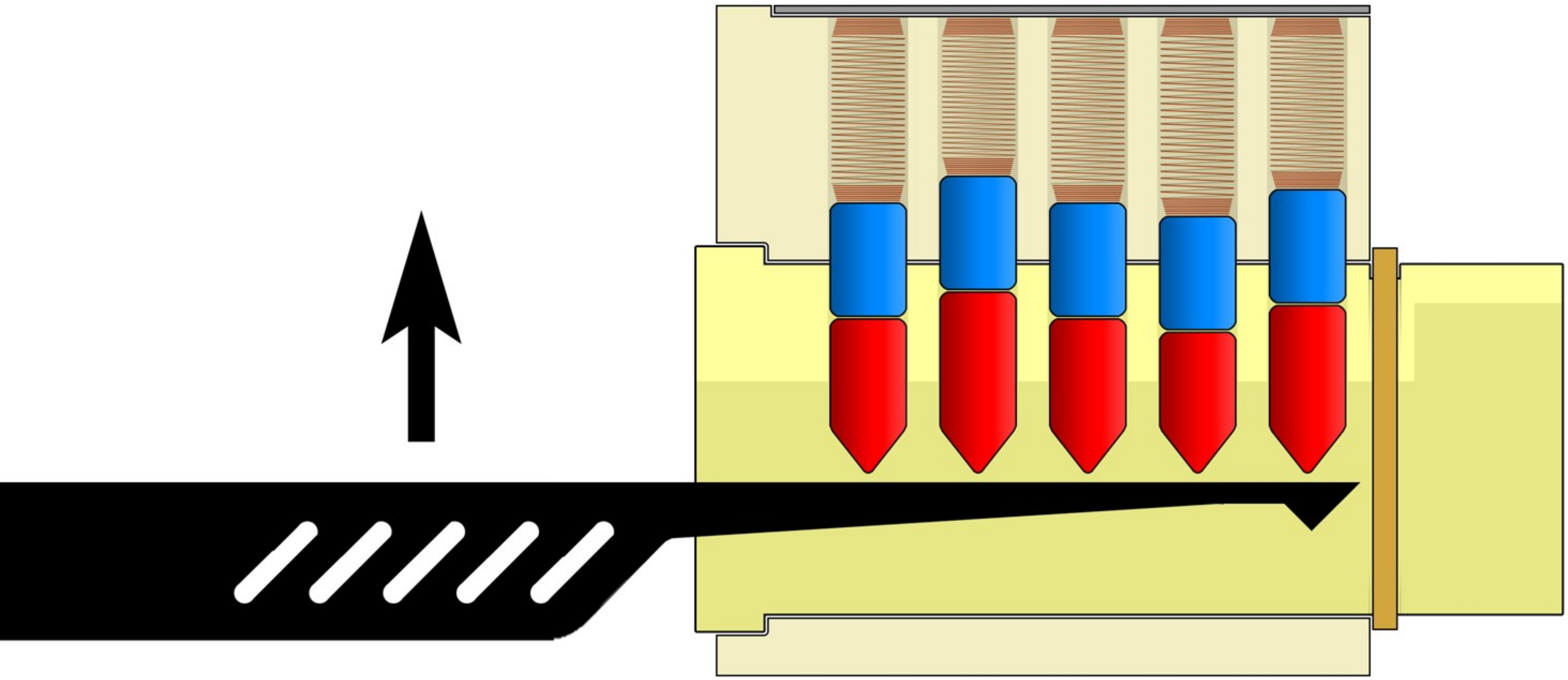
Raking/Shoveling with a Half-Diamond



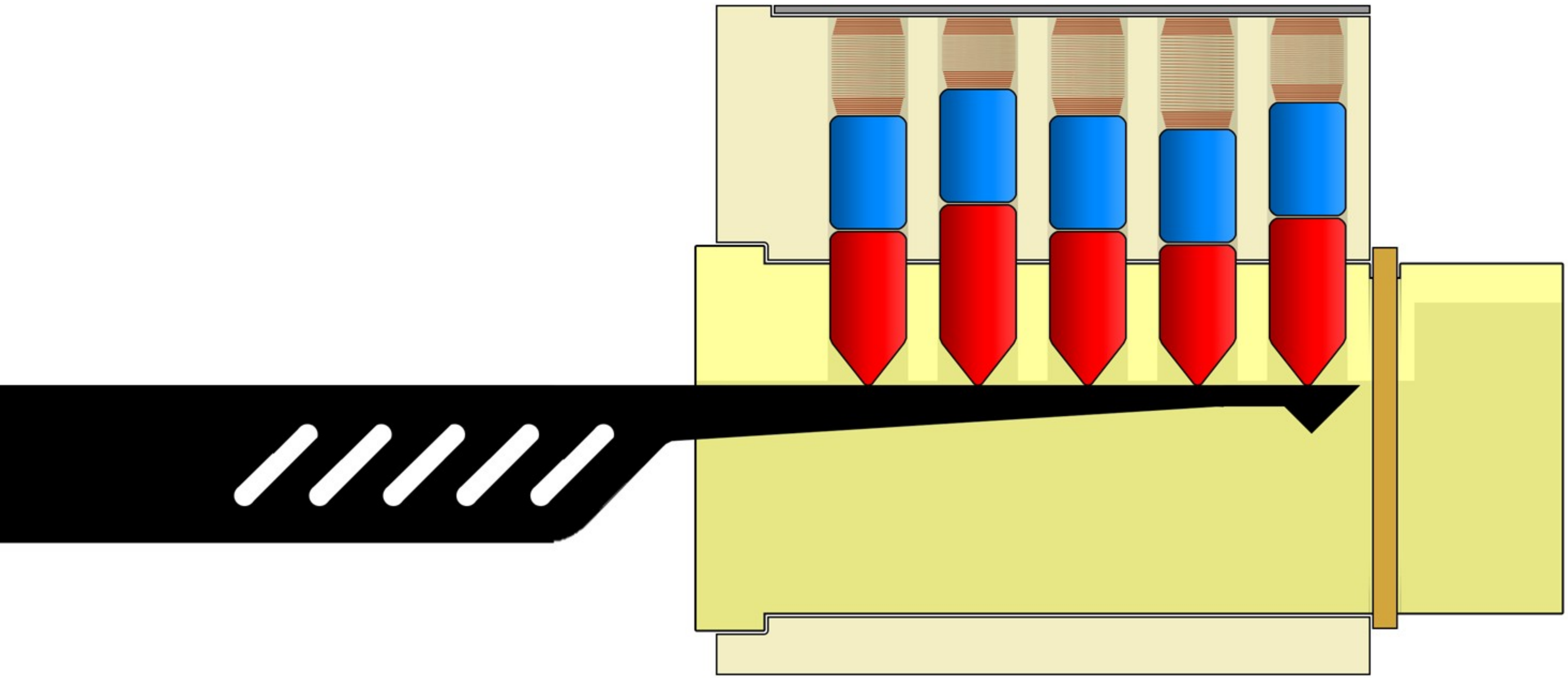
Using the Flat Underside



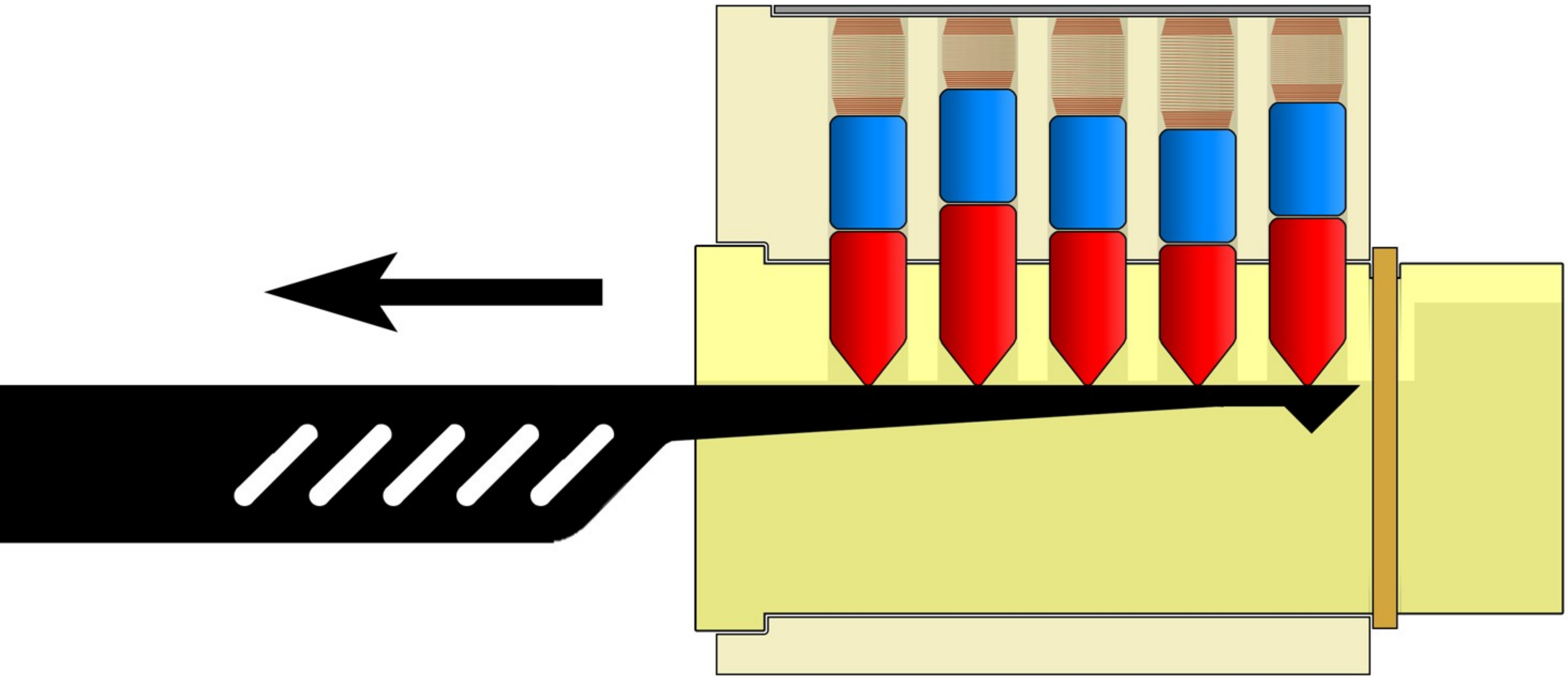
Using the Flat Underside



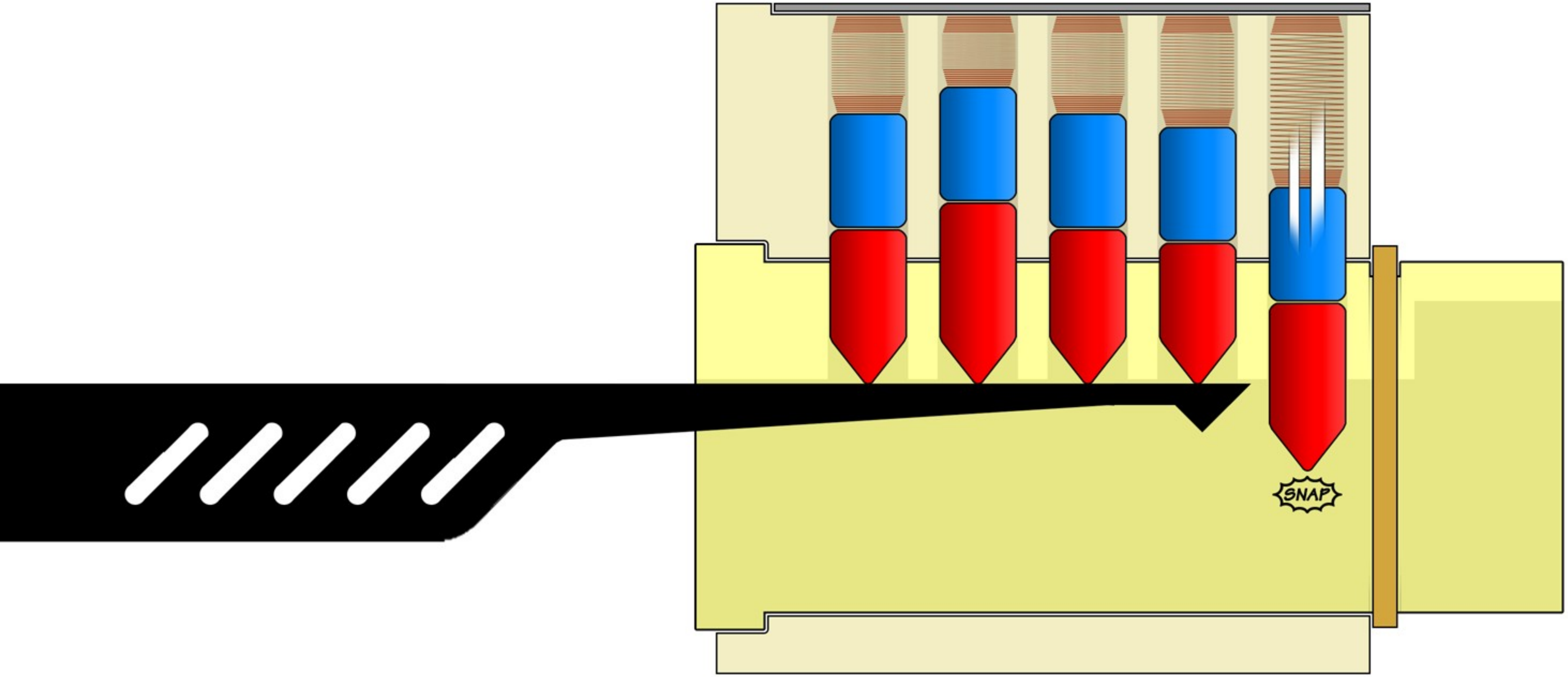
Counting Pin Stacks



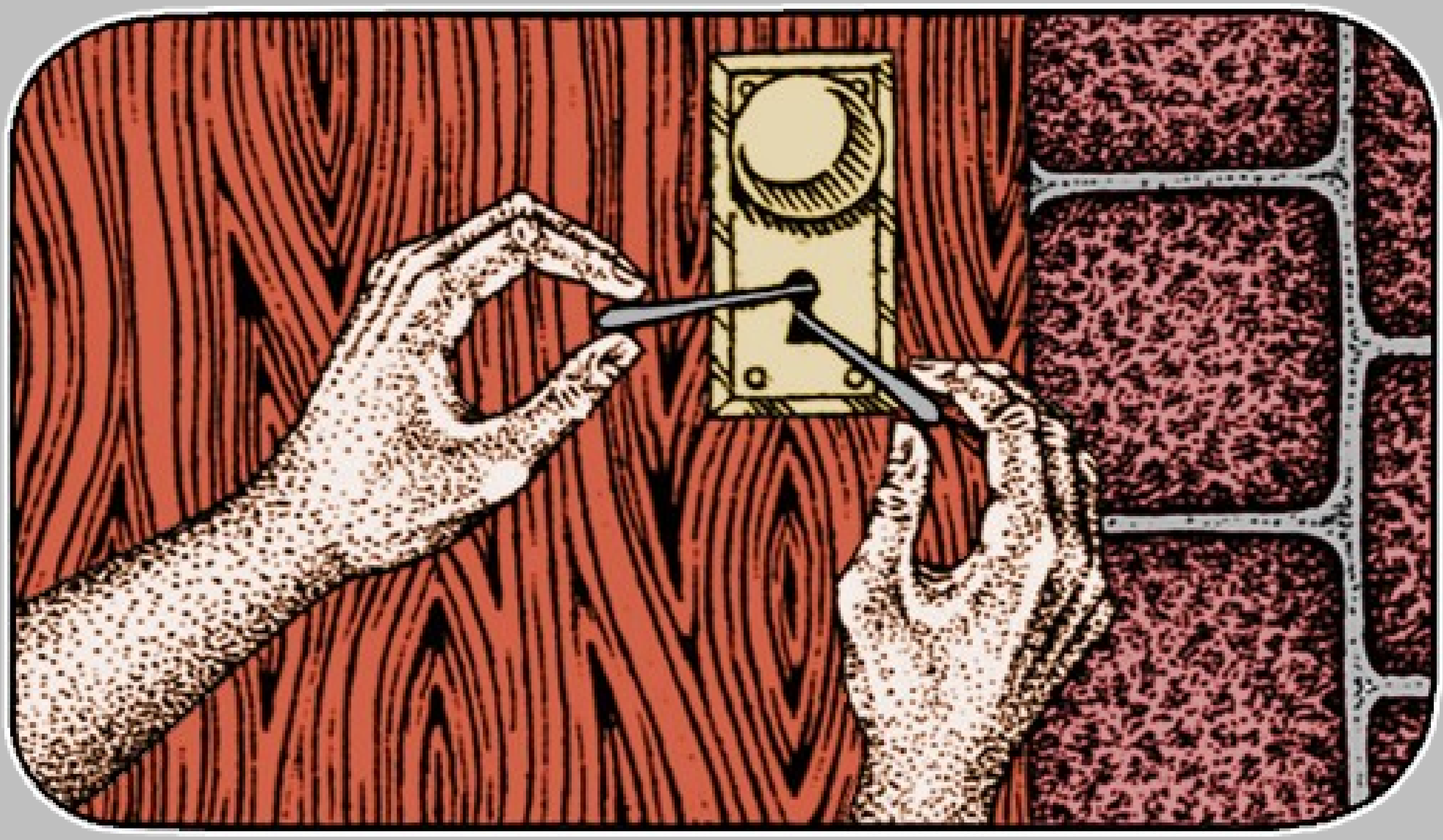
Counting Pin Stacks



Counting Pin Stacks



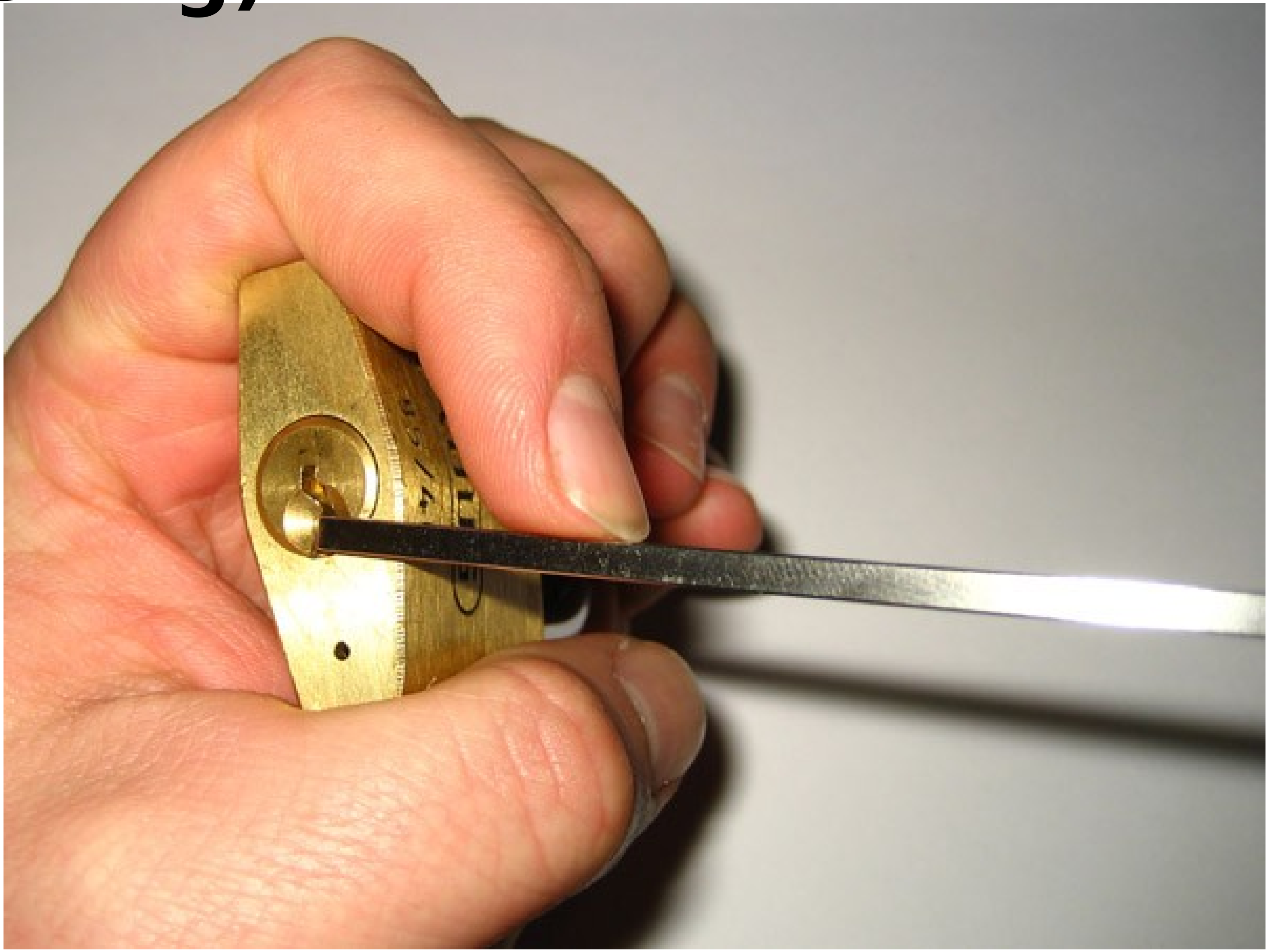
Turning Tools



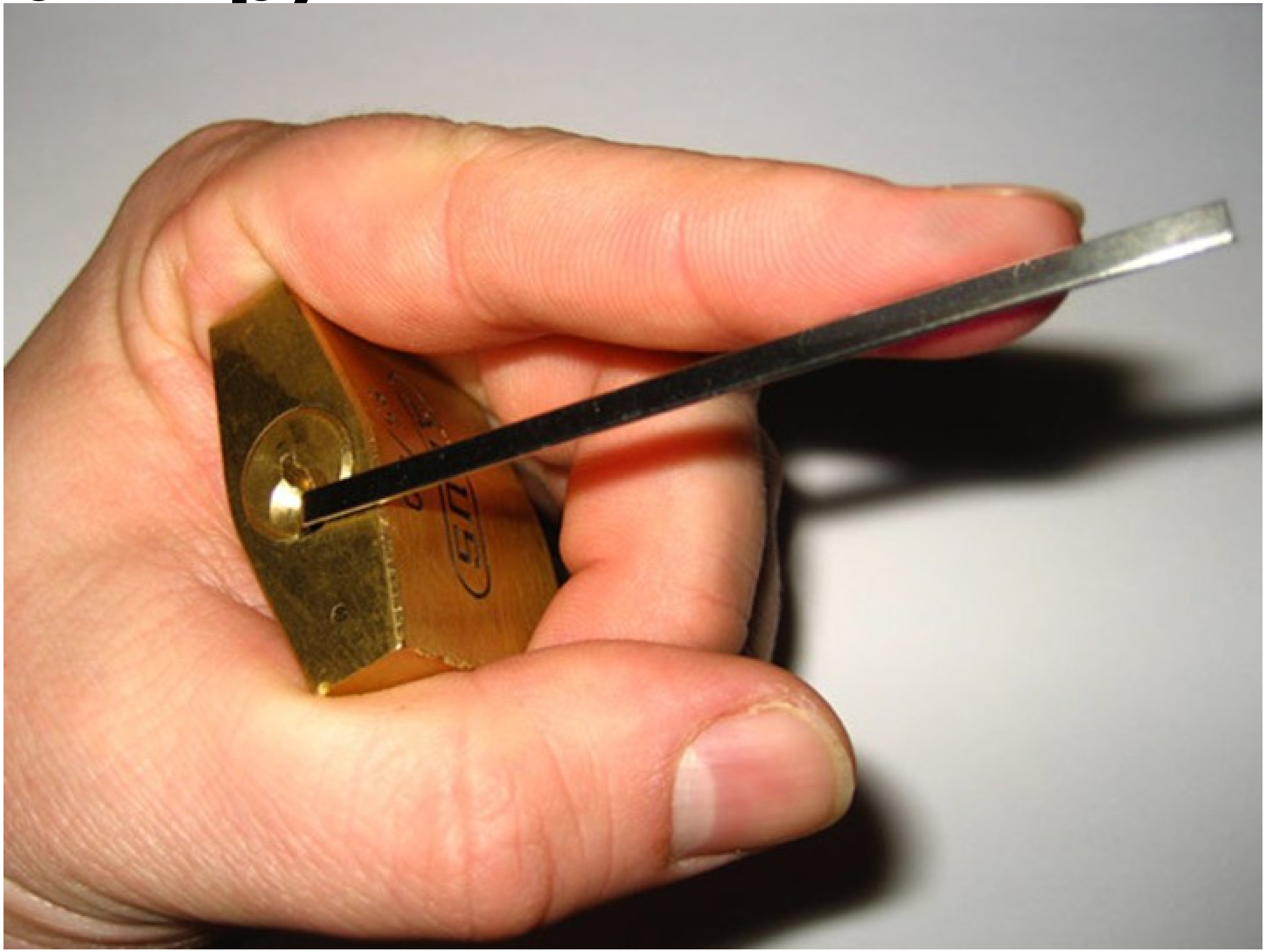
Bad Turning Tool Usage (Pulling)



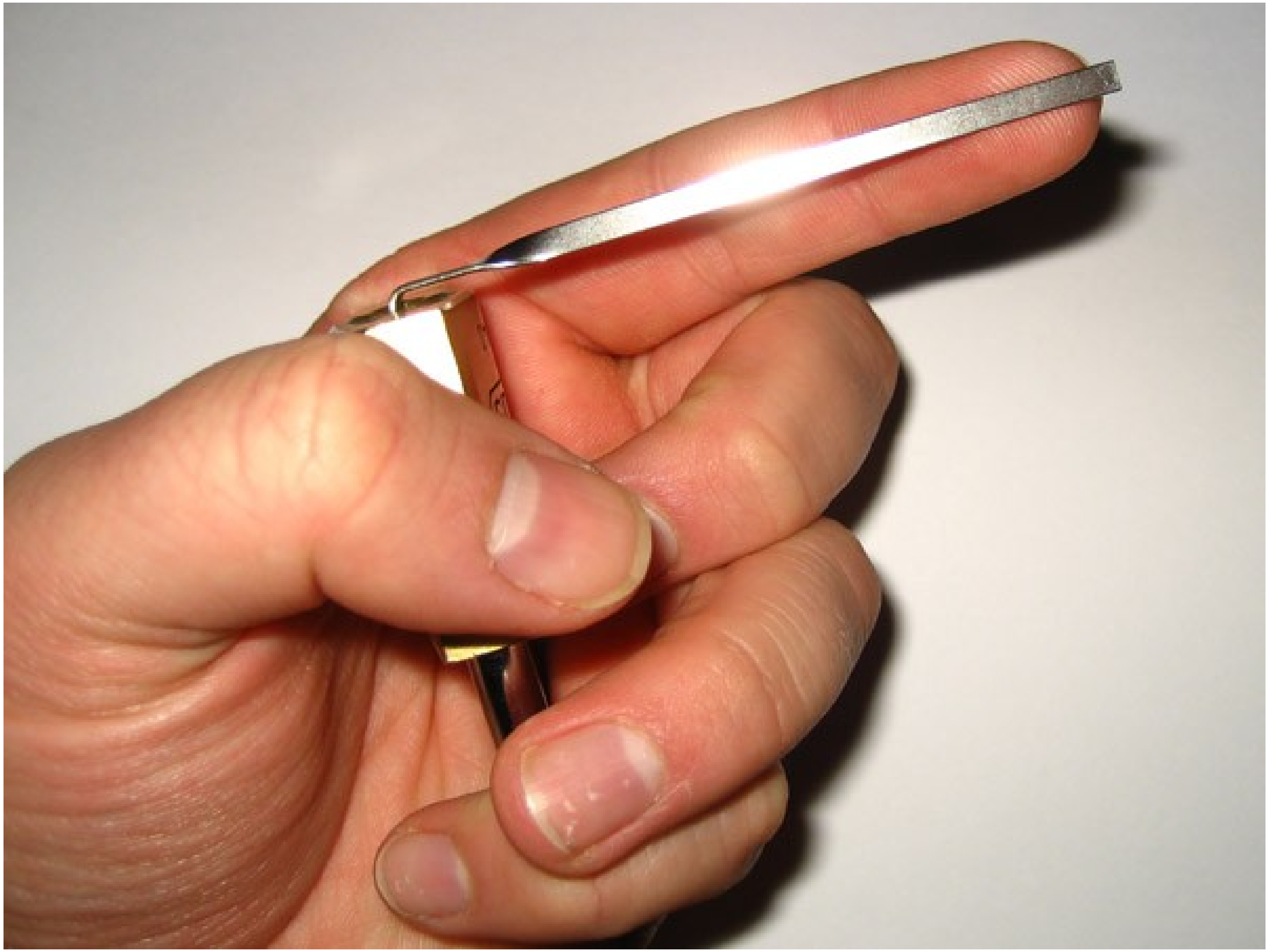
Better Turning Tool Usage (Pushing)



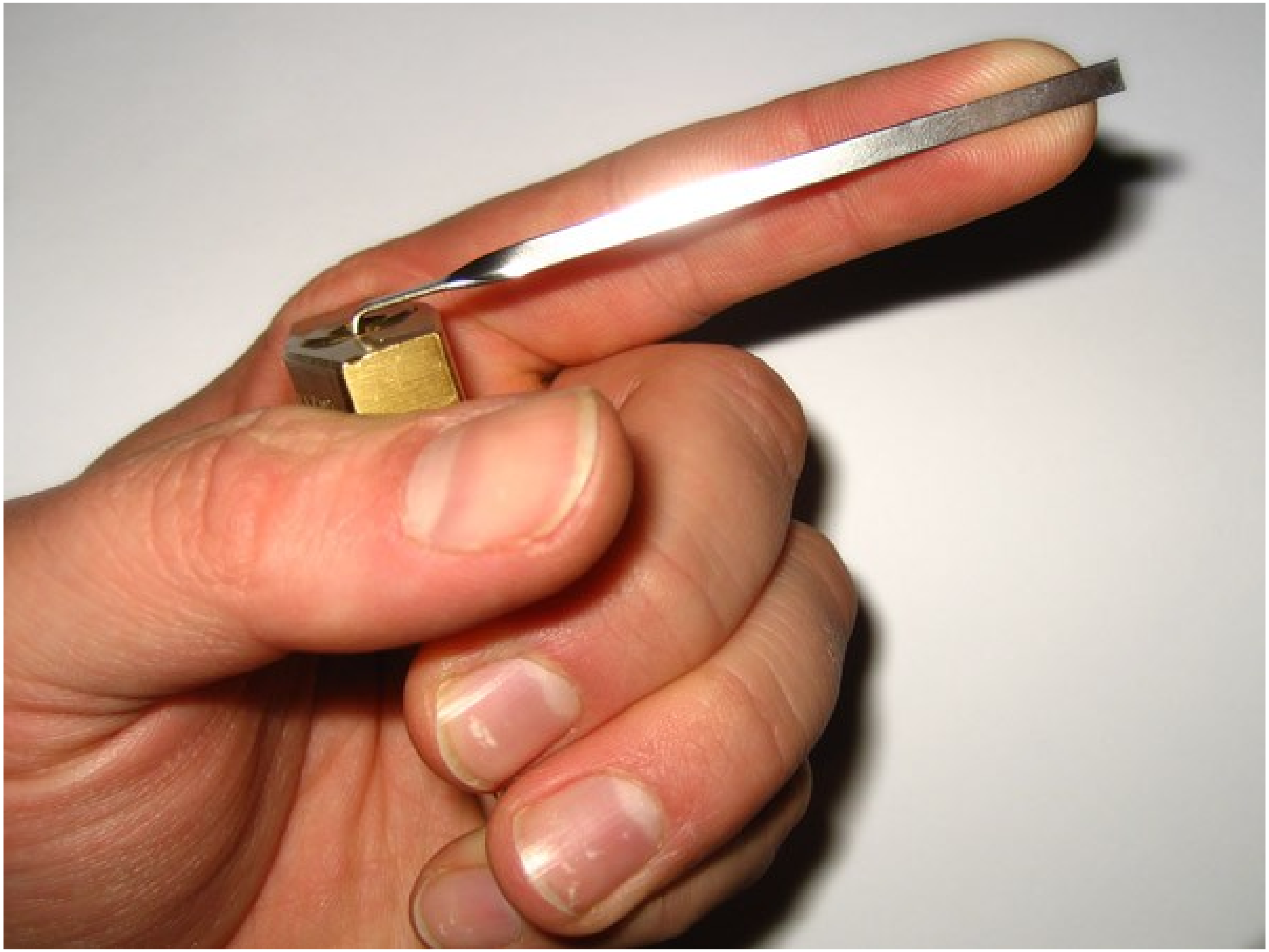
Best Turning Tool Usage (Pushing Out at Tip)



Good Turning Tool Pressure



Too Much Turning Tool Pressure!



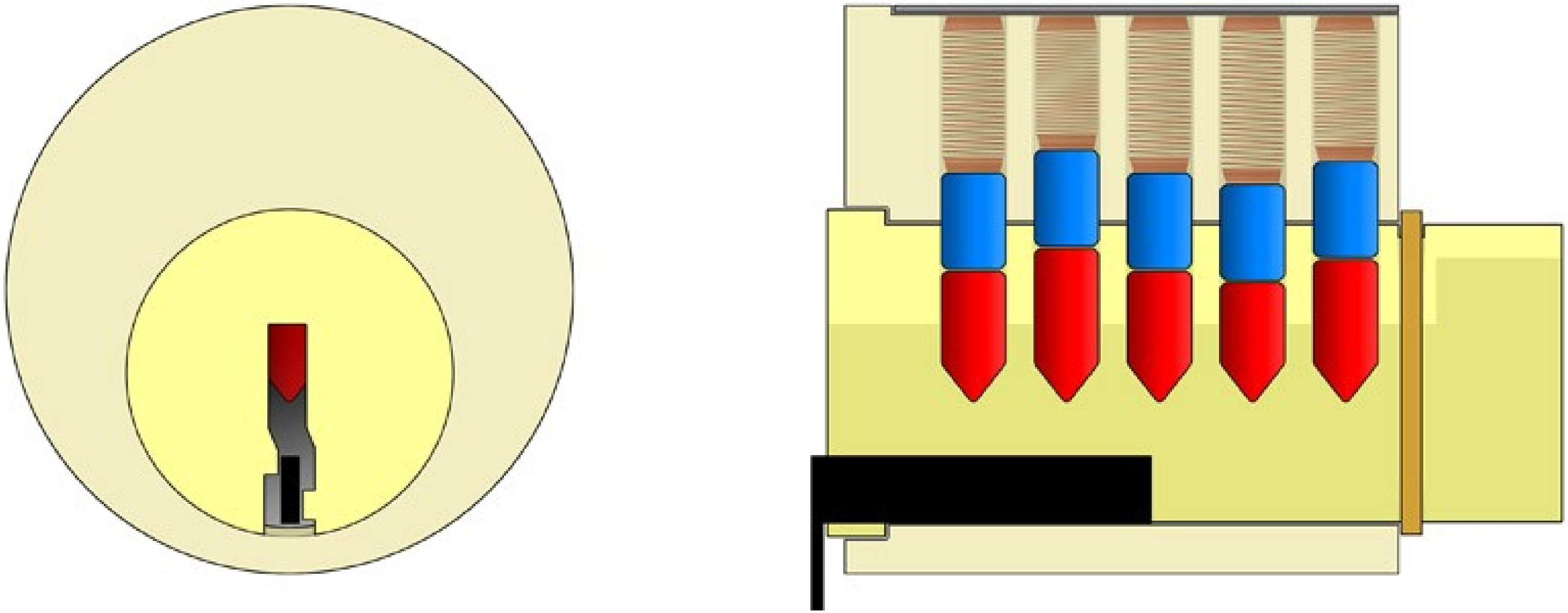
Turning Tool Position: “Edge of the Plug”



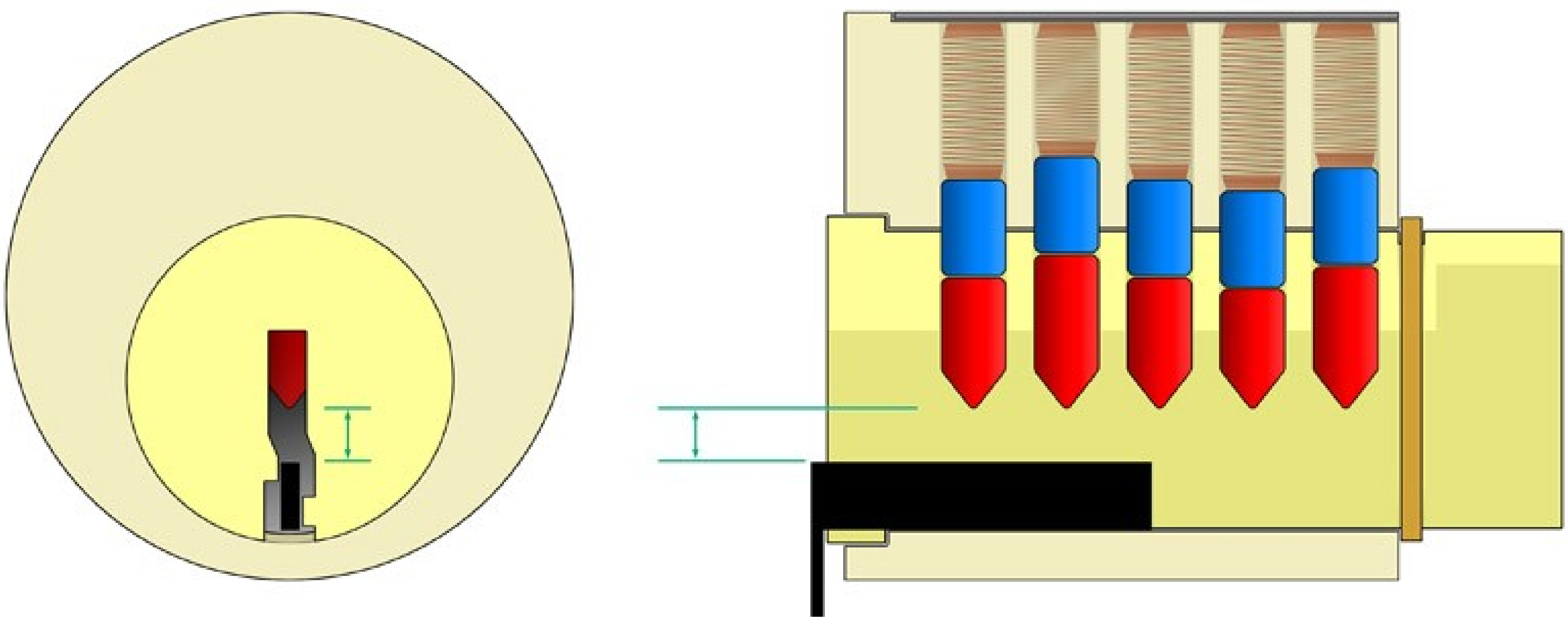
“Standard” Turning Tools



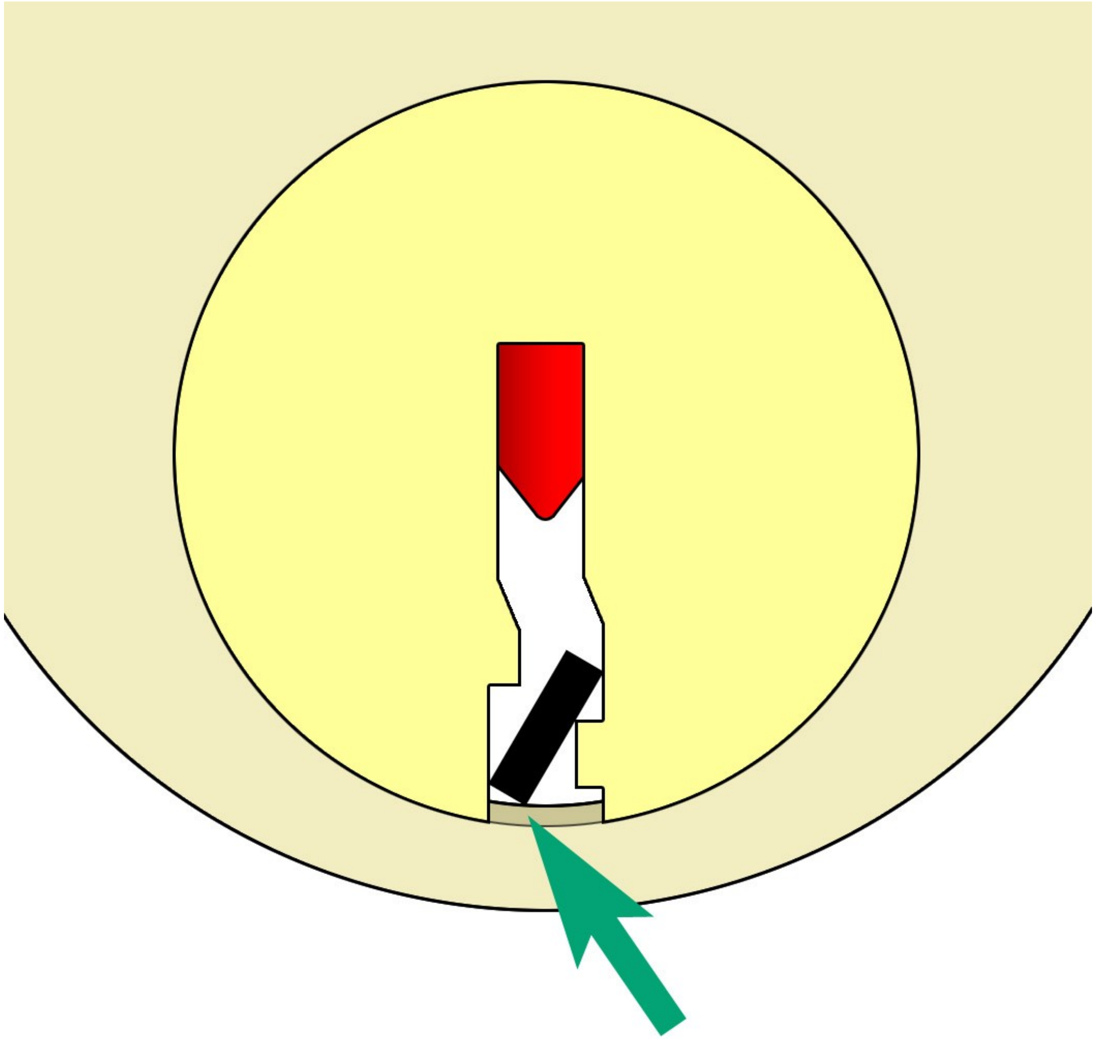
Space in the Keyway



Space in the Keyway



Careful to not Cause Extra Friction



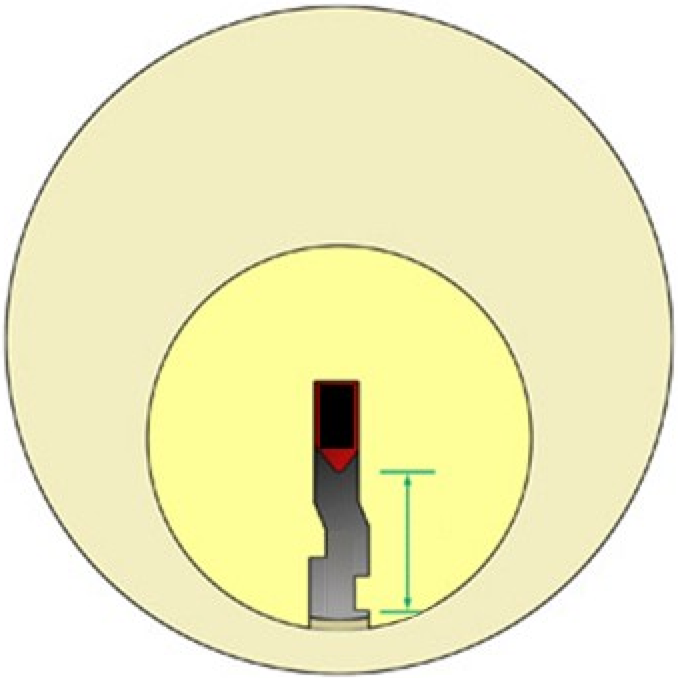
“Standard” vs “Flat” Turning Tools

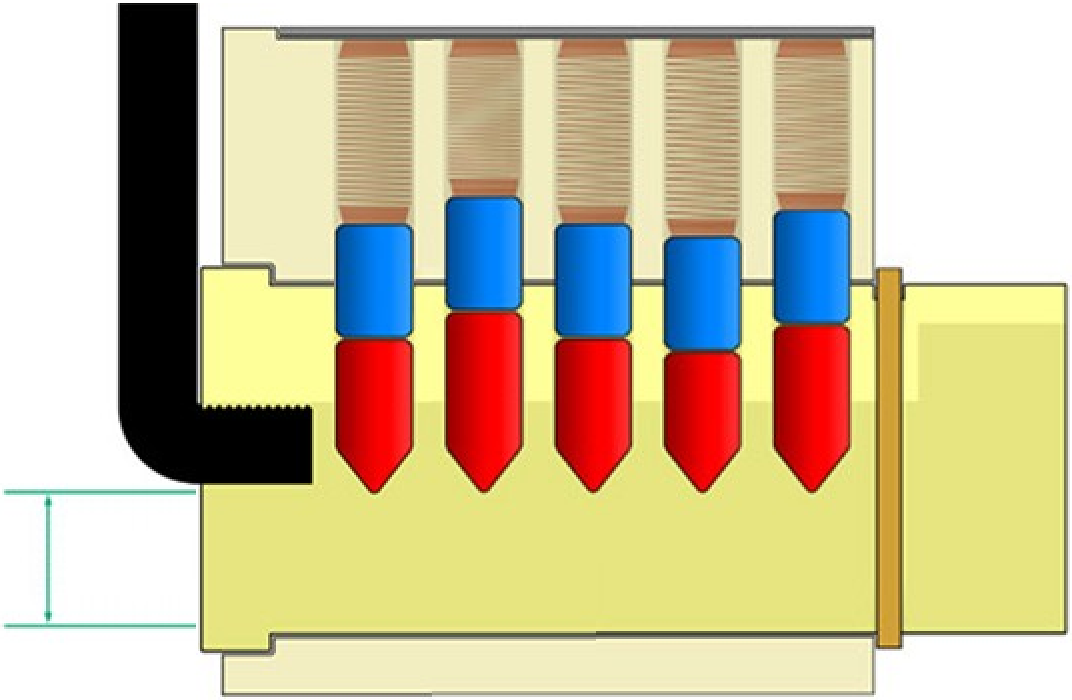


Turning Tool Position: “Center of the Plug”

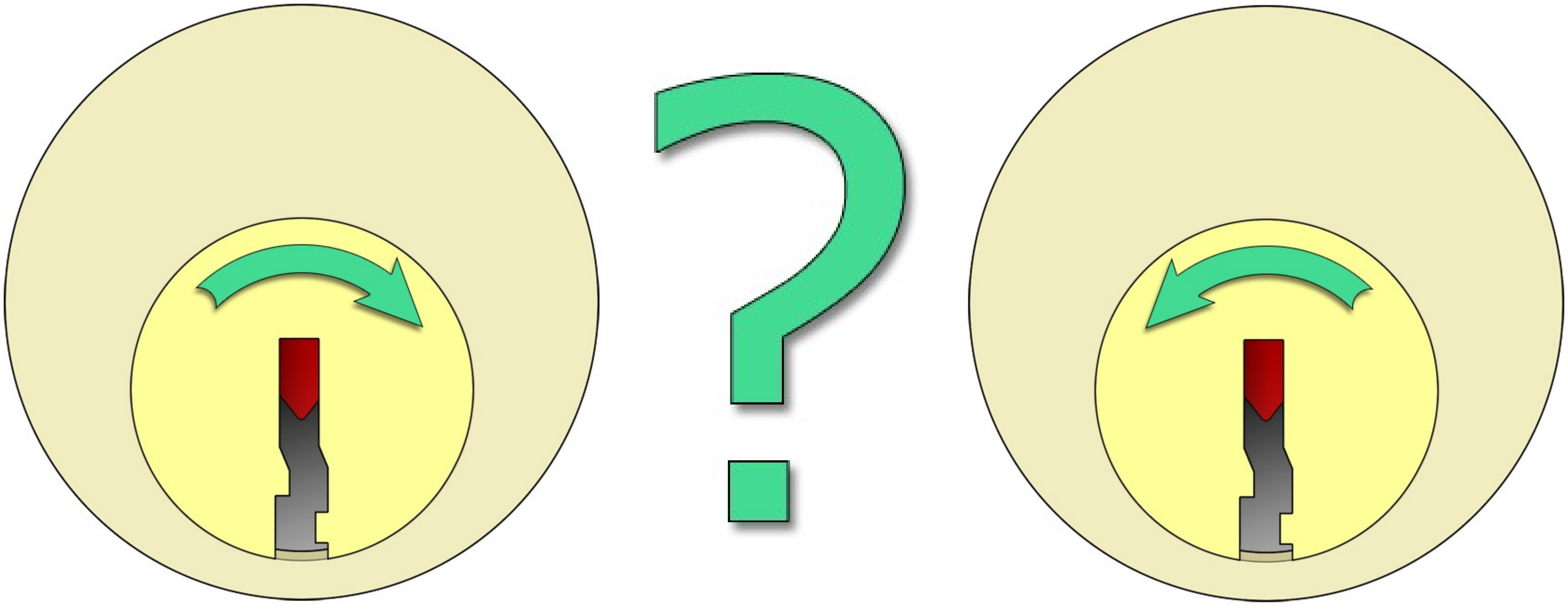


More Space in the Keyway



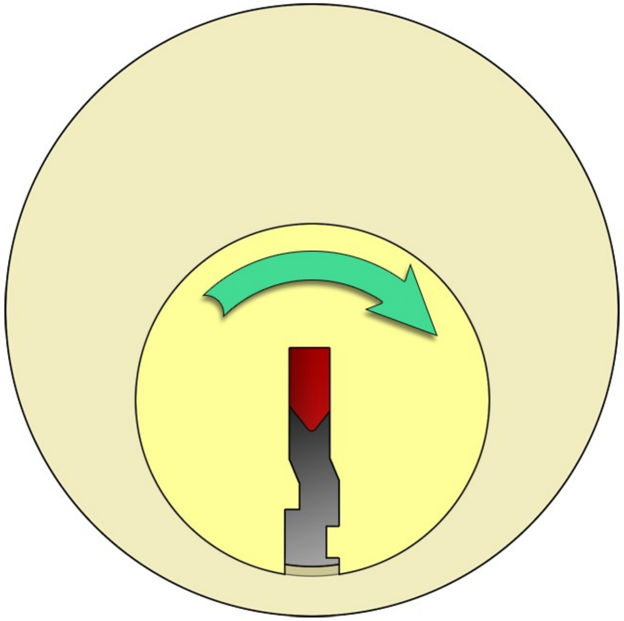


Turning Direction



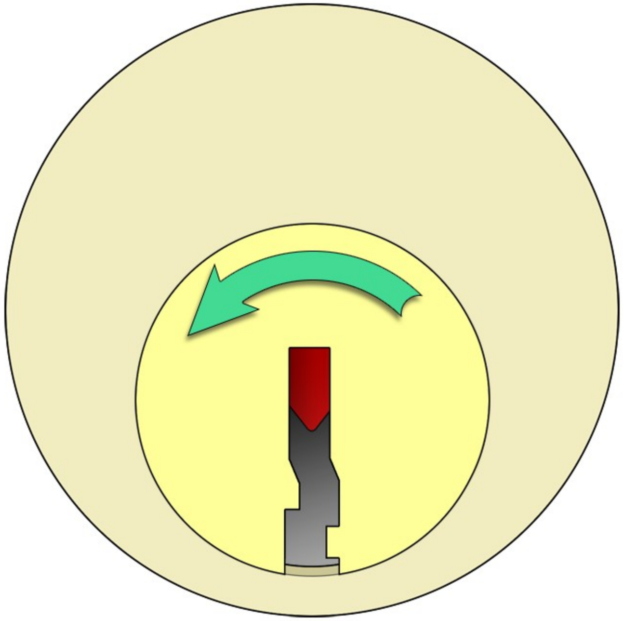
Turning Direction





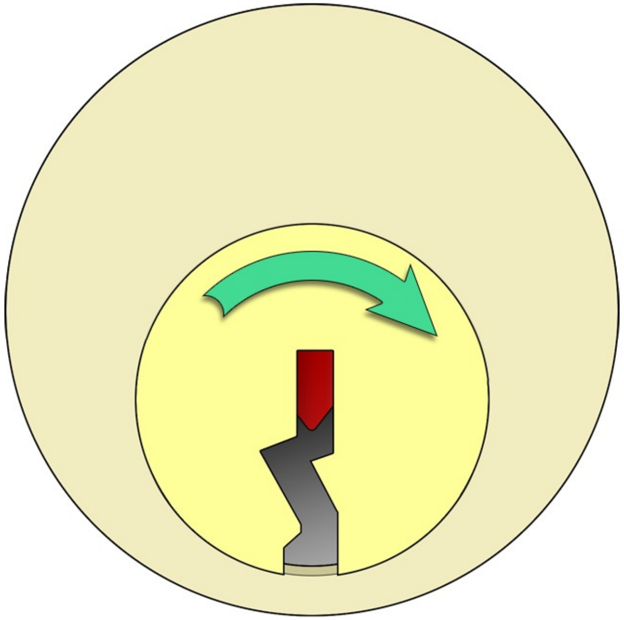
Turning Direction





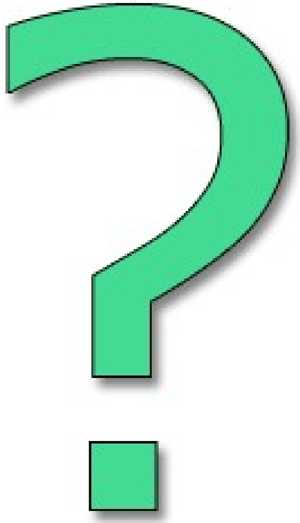
Turning Direction





Turning Direction

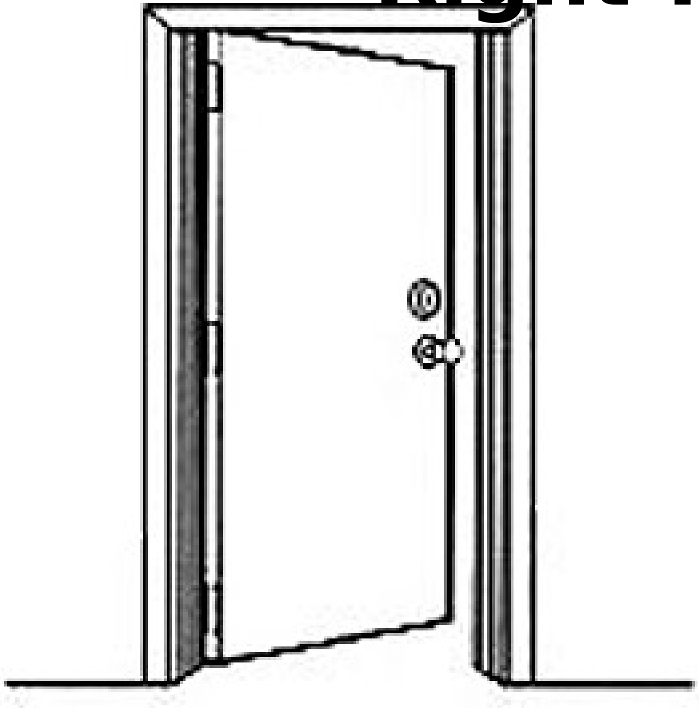


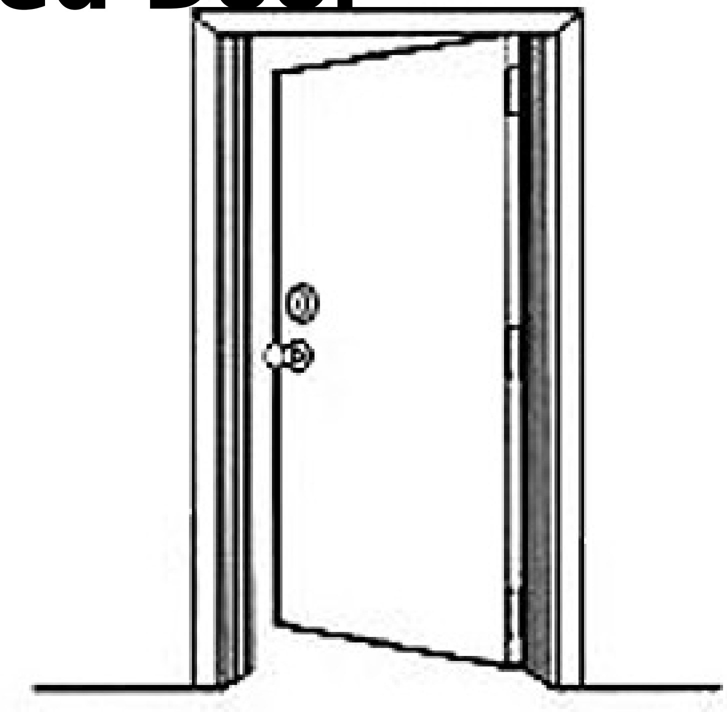


Turning Direction

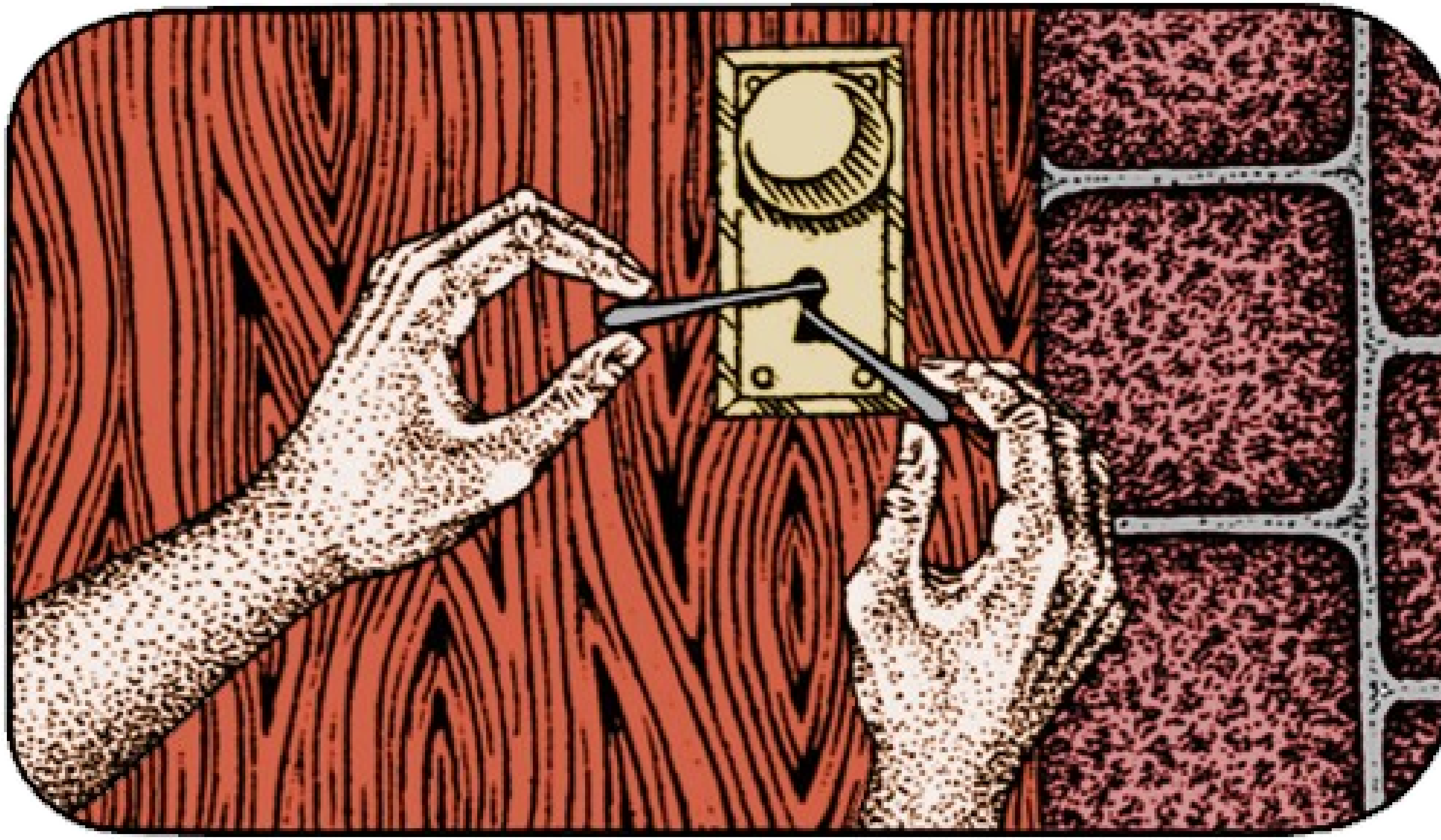
Left-Handed Door

Right-Handed Door





Who Wants To Try?



Practice Locks



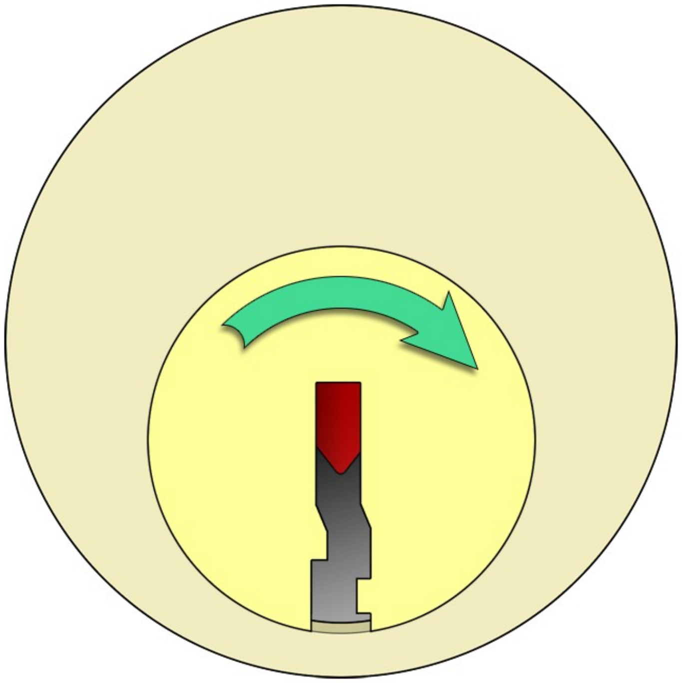


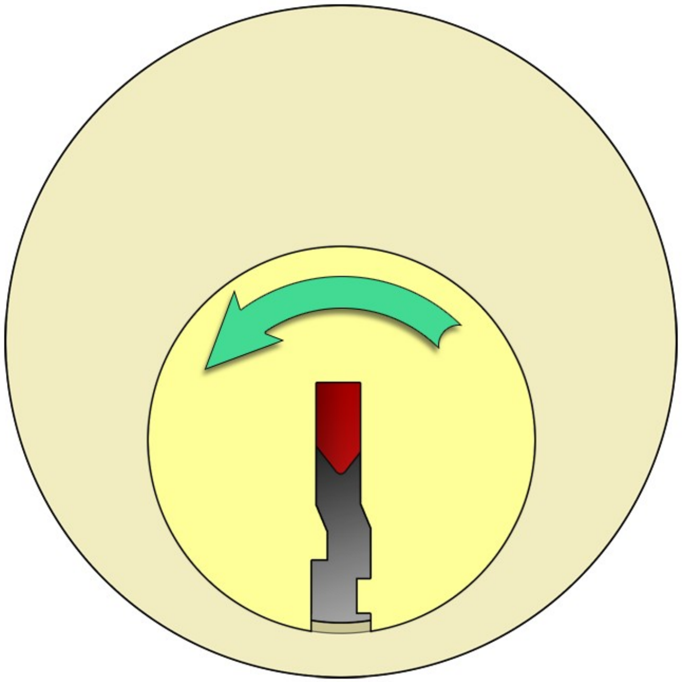
Our Practice Locks



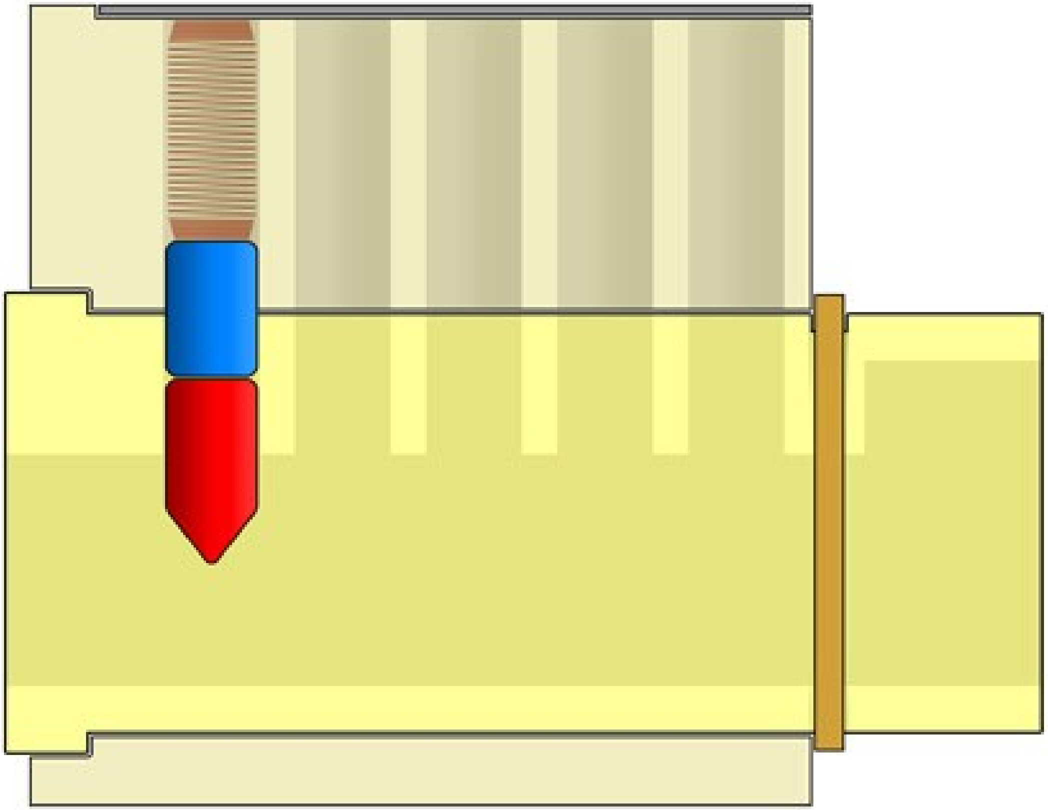
The silver part is the front face...

Either Direction Will Work

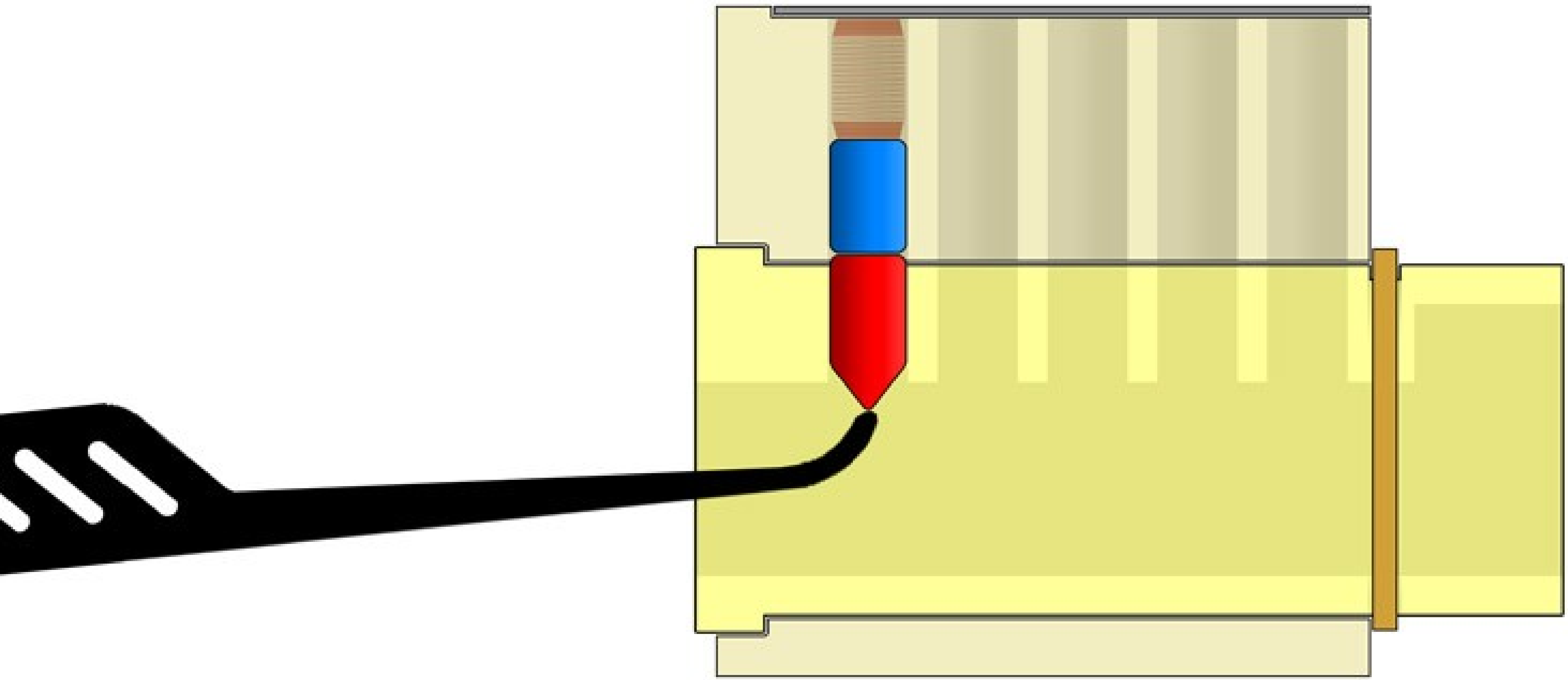




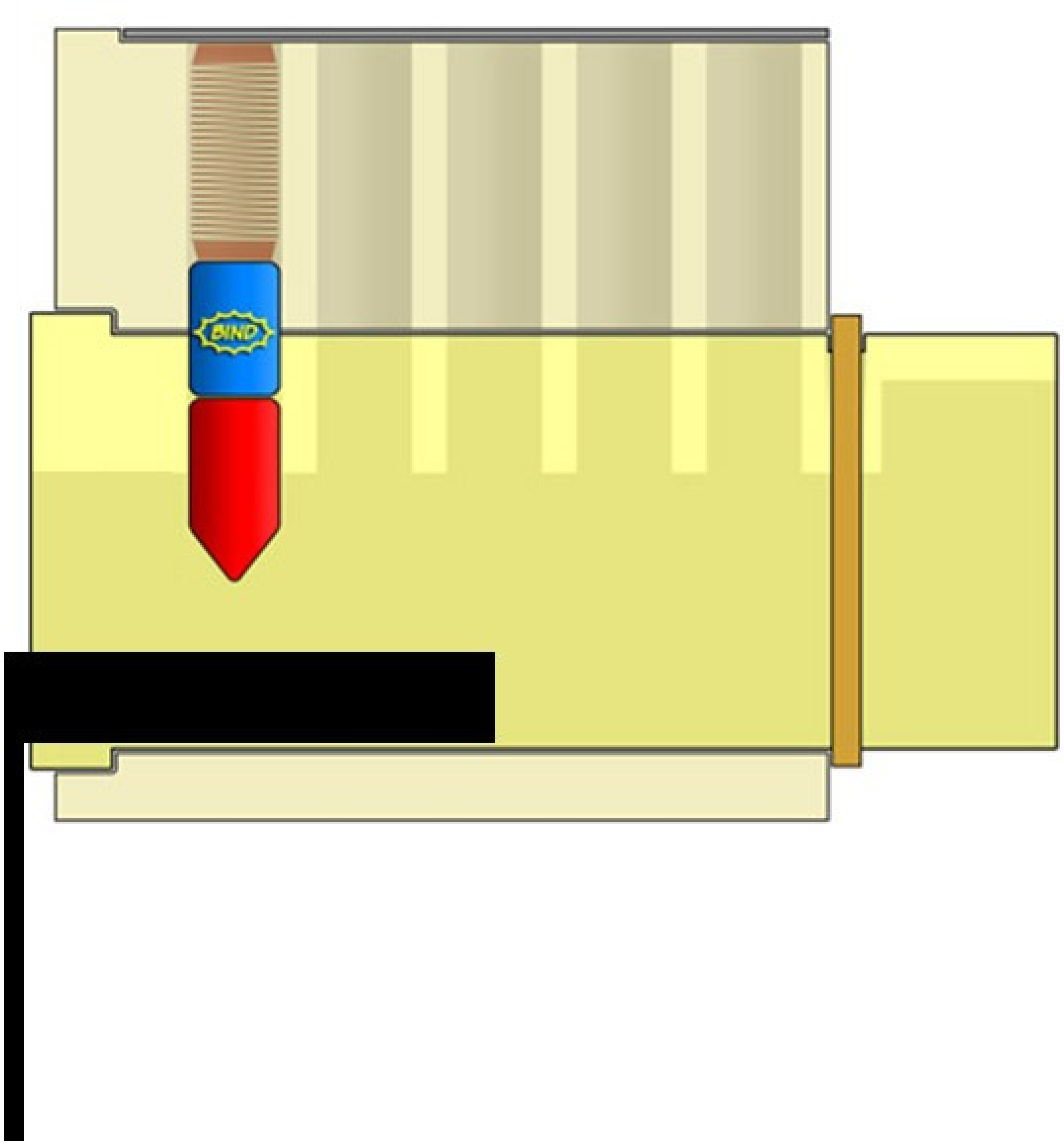
Starter Exercises



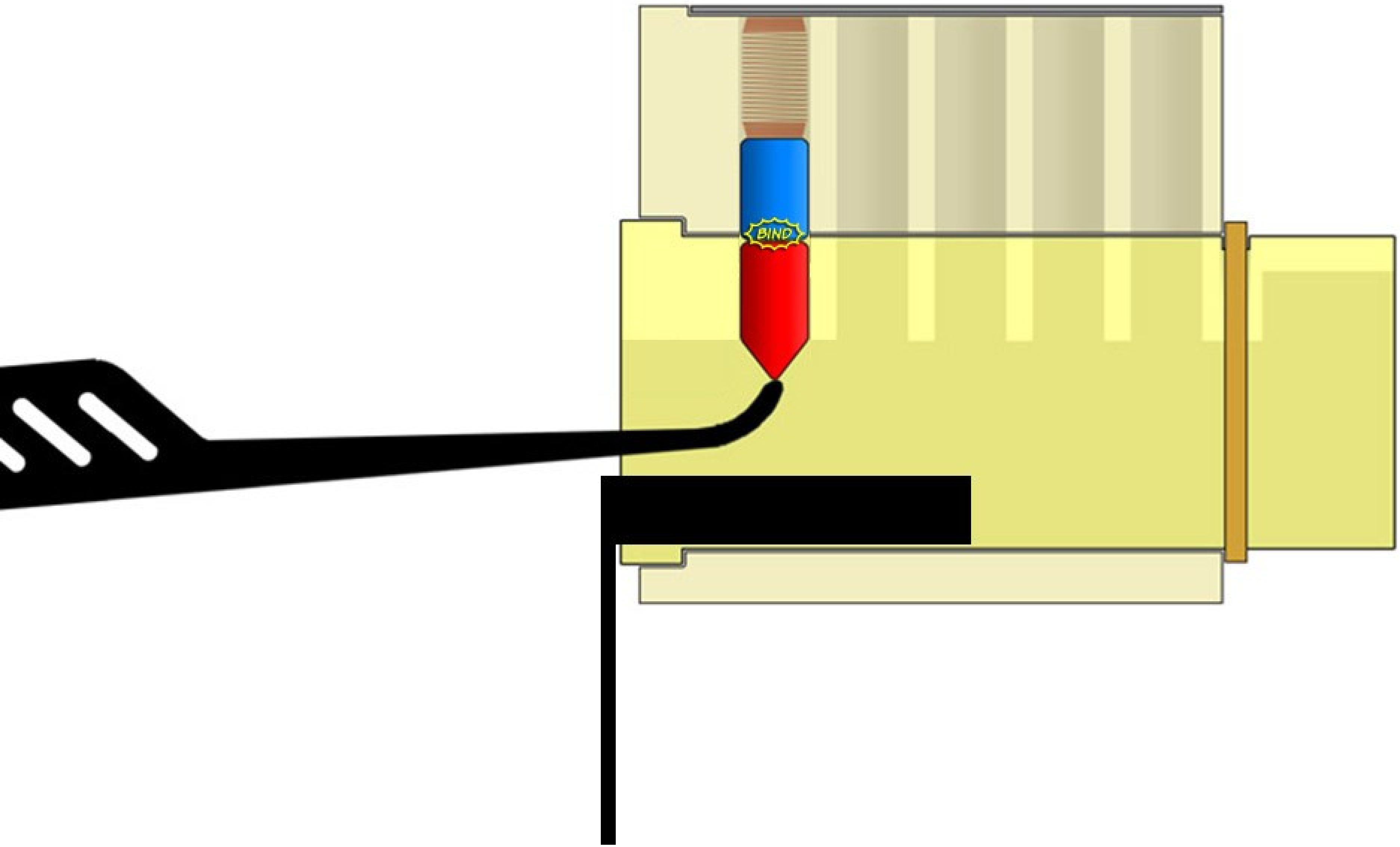
Starter Exercises



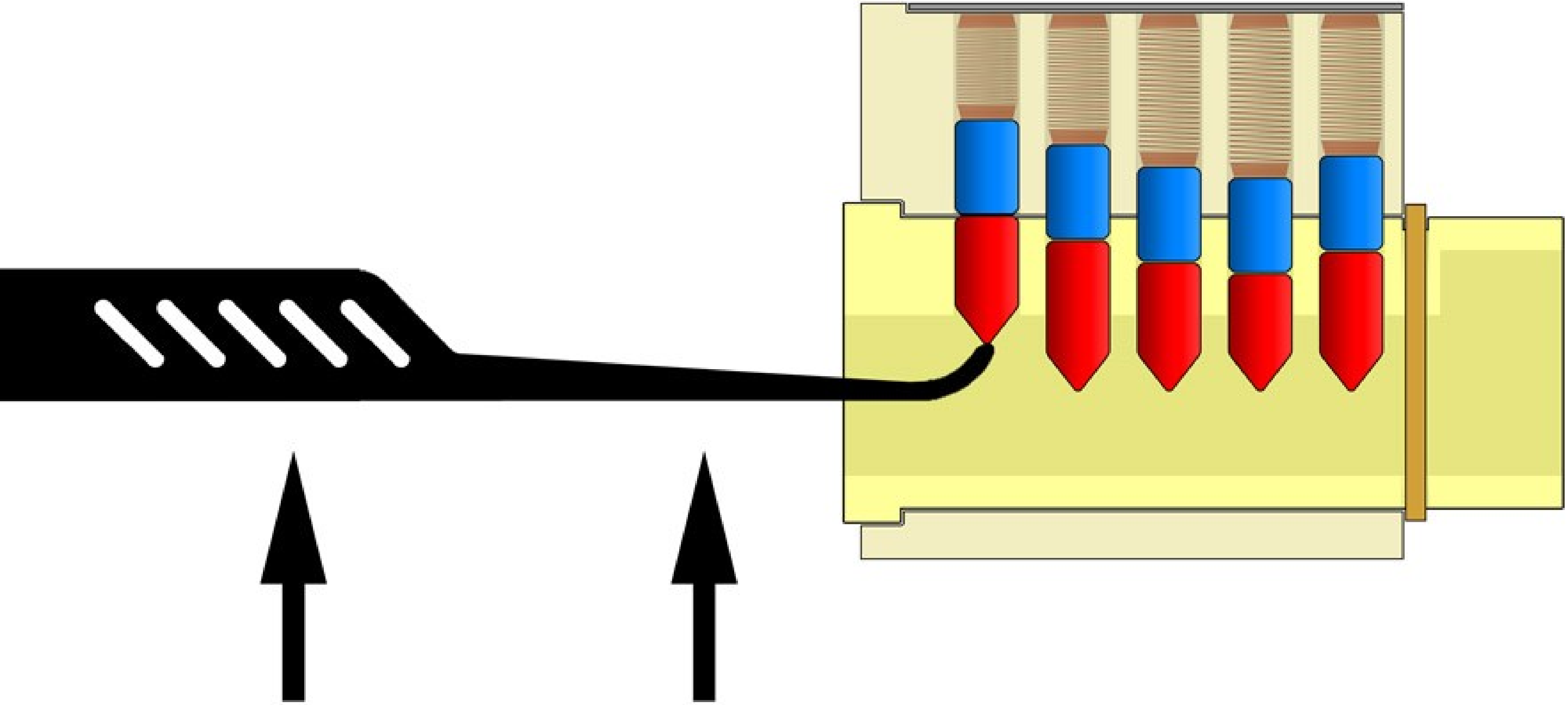
Starter Exercises



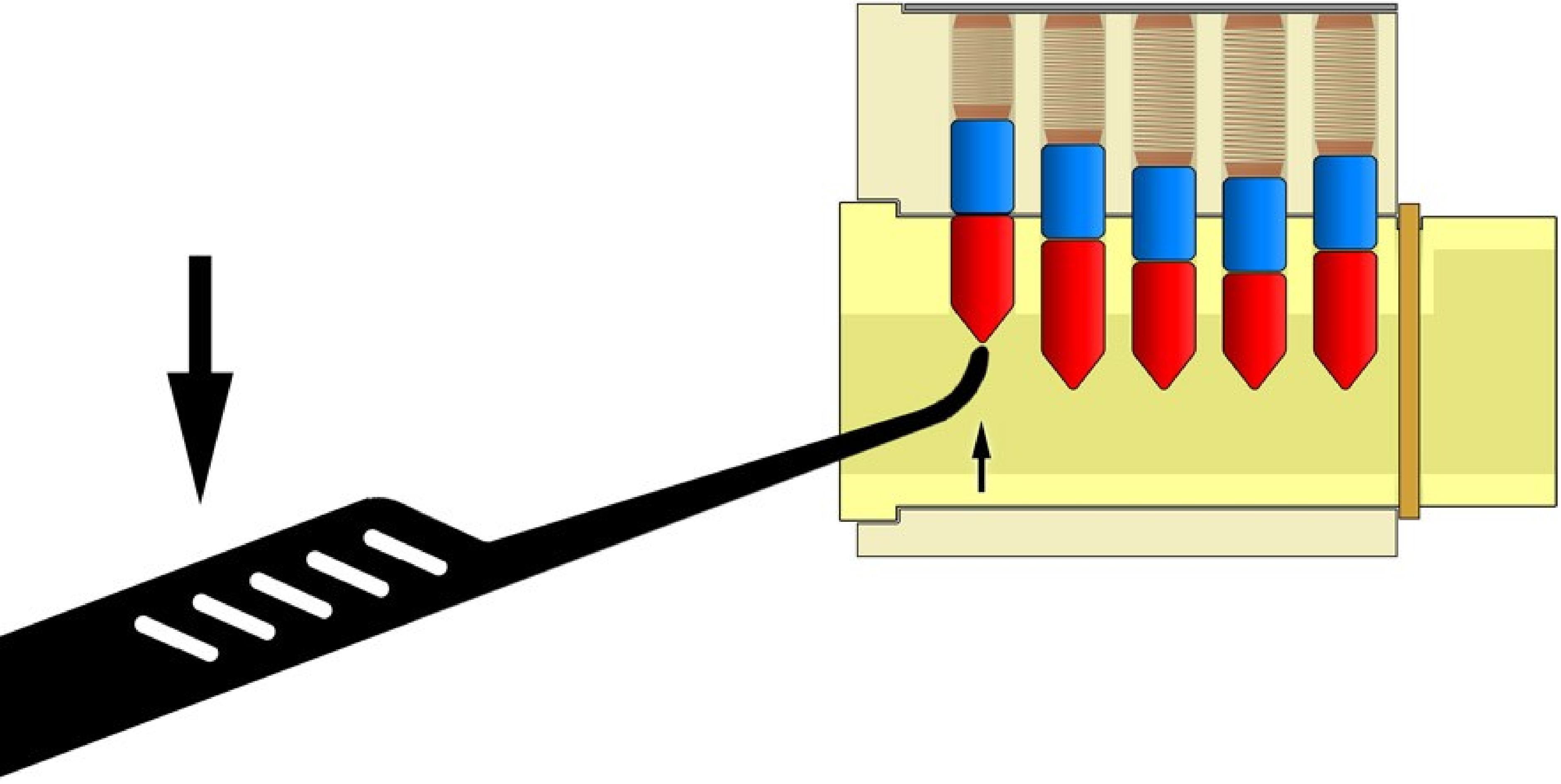
Starter Exercises



Direct Lifting



Rocking Lifting



The Two Most Important Things…

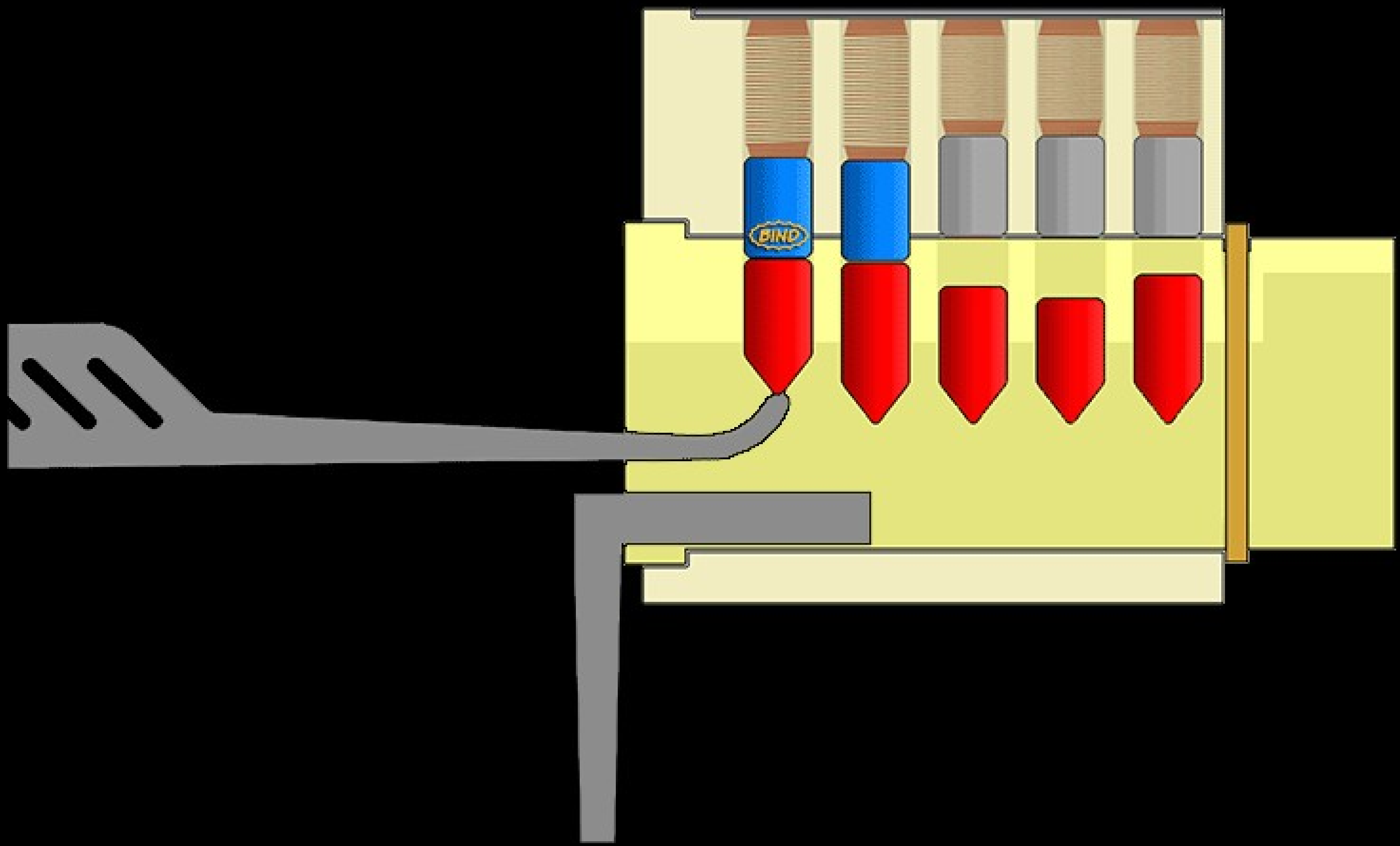
RELAX



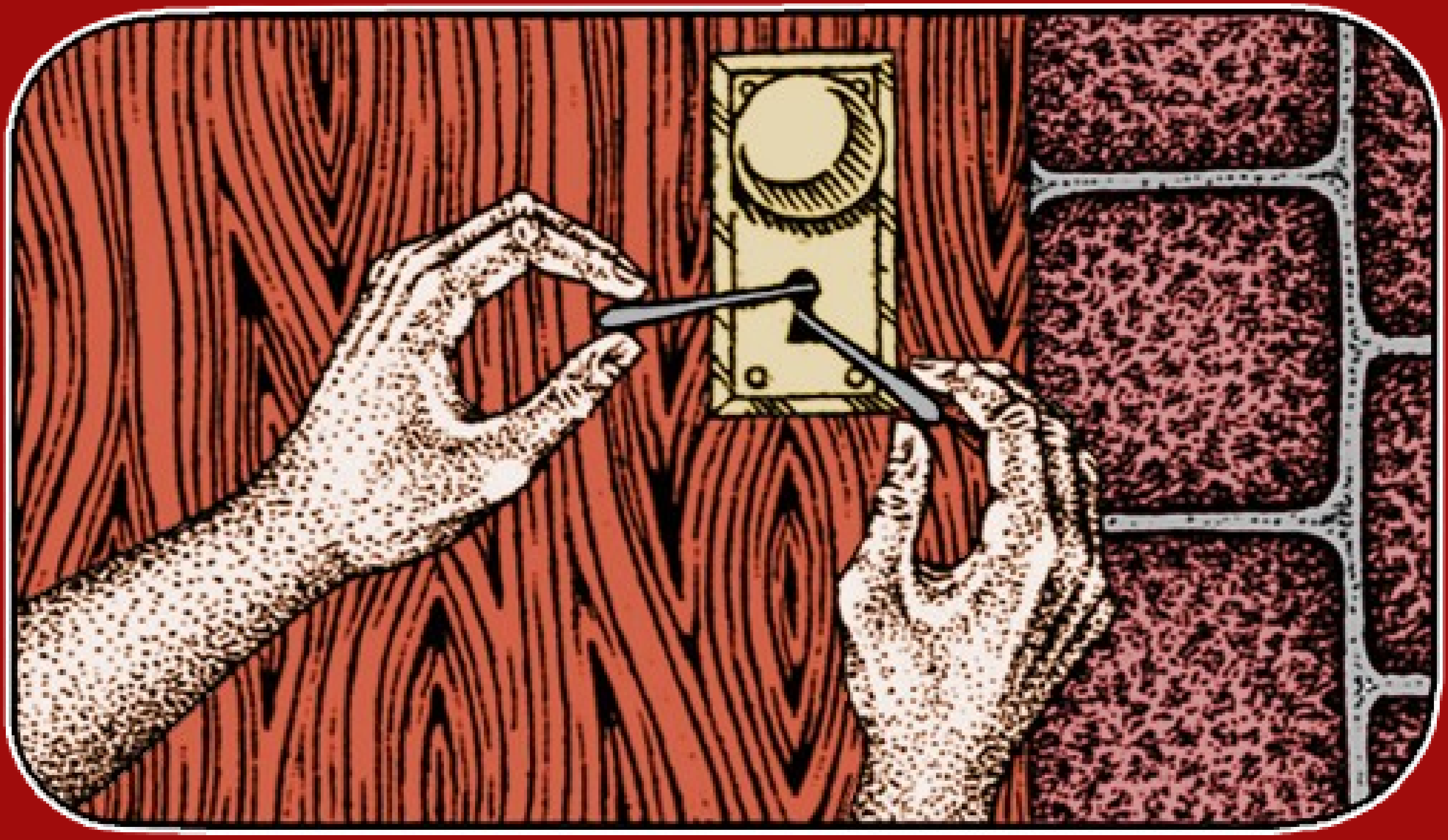
The Two Most Important Things…



Questions?



Wafer Locks



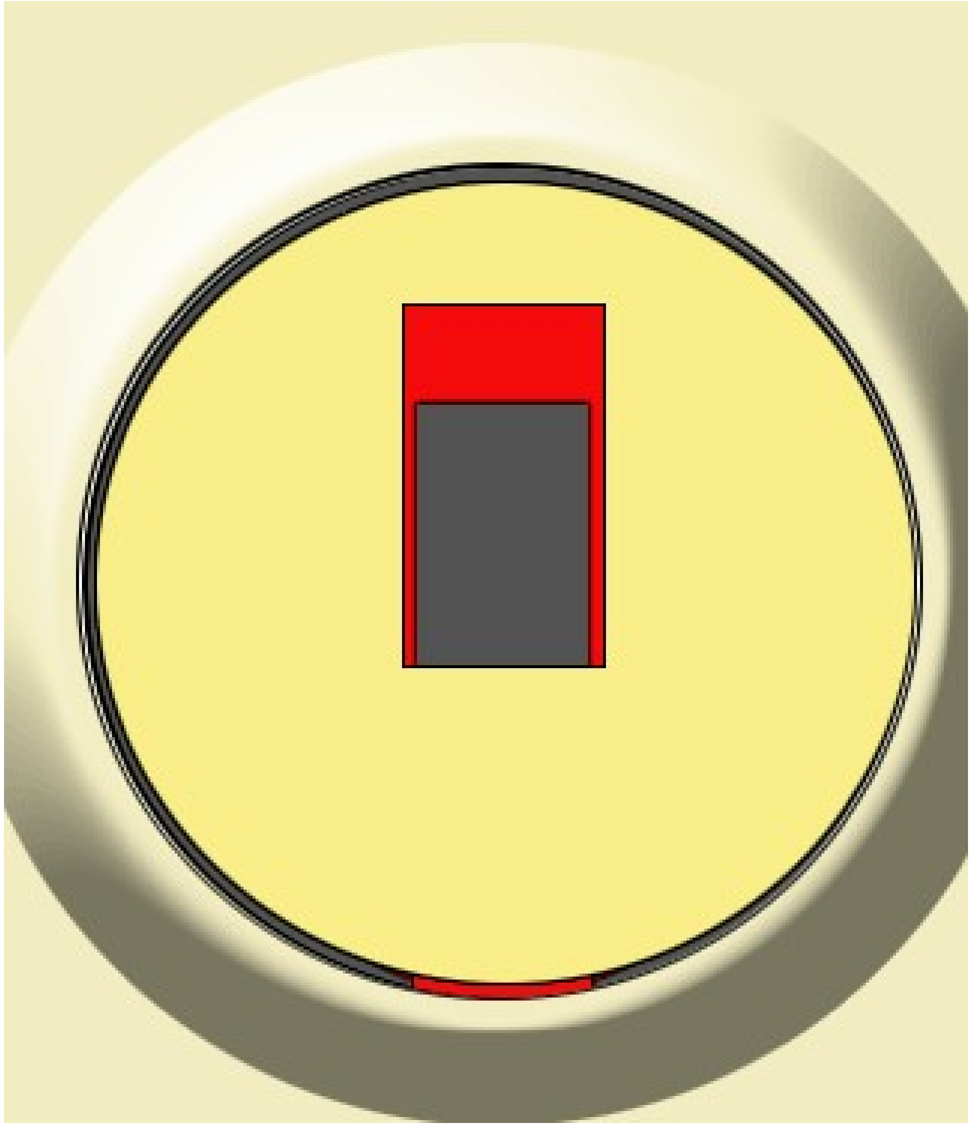
Wafer Locks



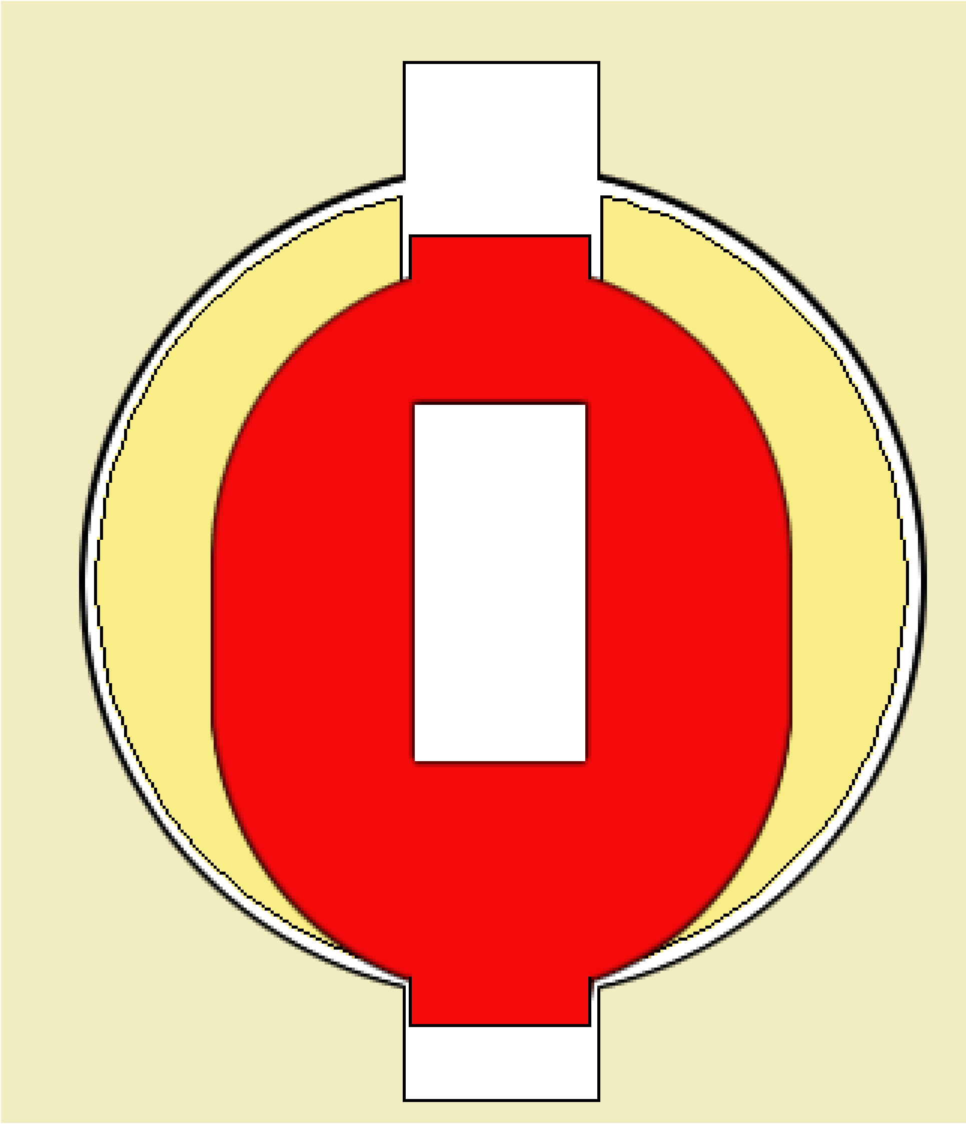
Wafer Locks



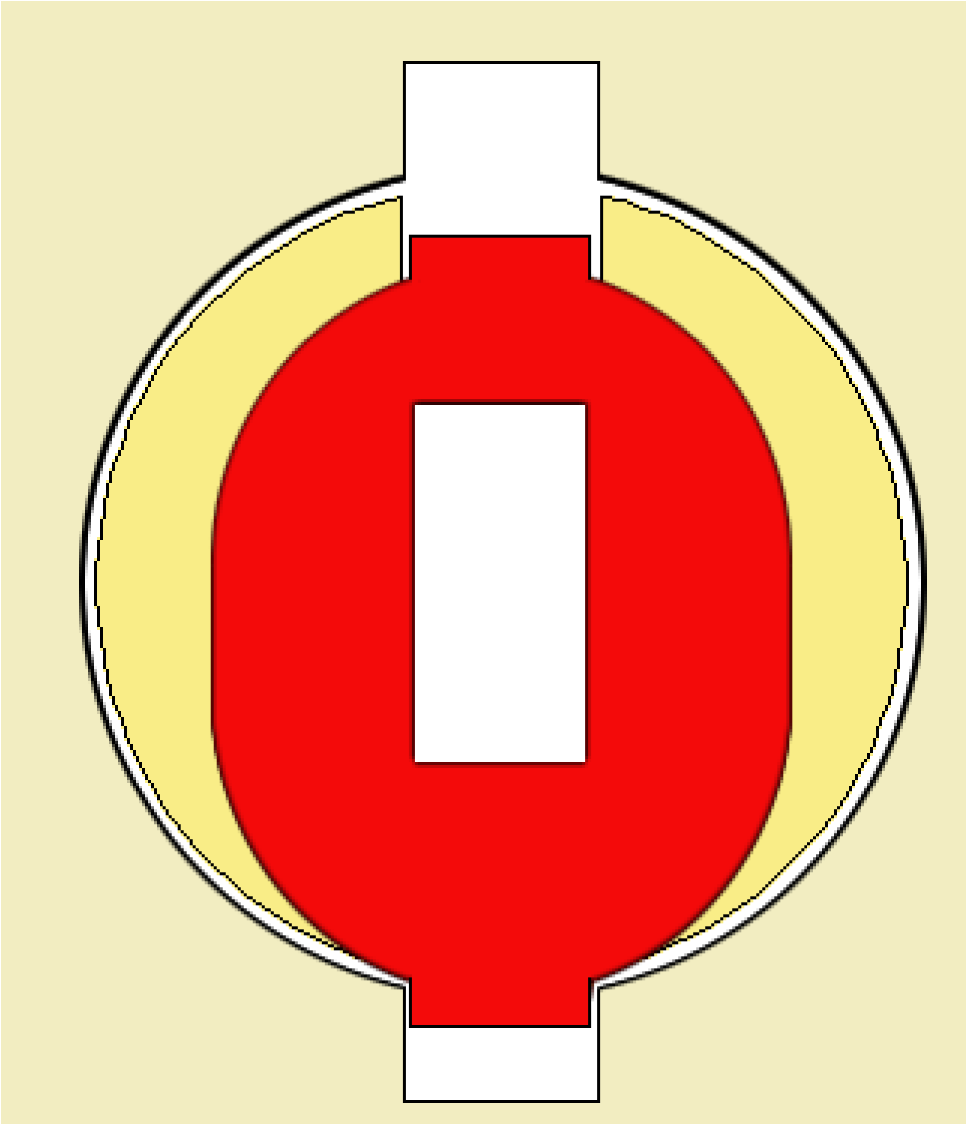
Wafer Locks – Outer View



Wafer Locks – Inner View



Wafer Locks – Operating Action



Wafer Lock Usage



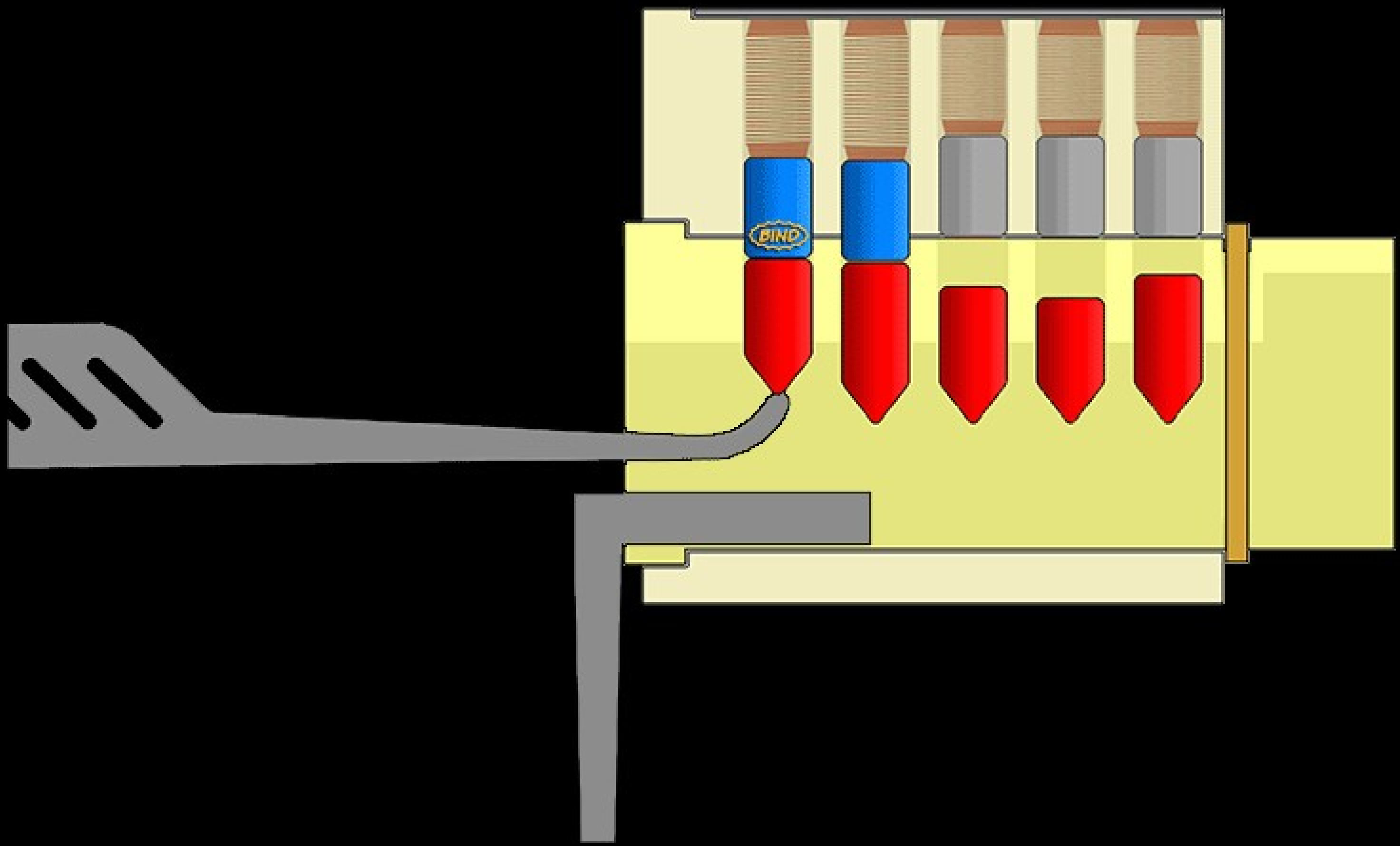
Wafer Lock Usage



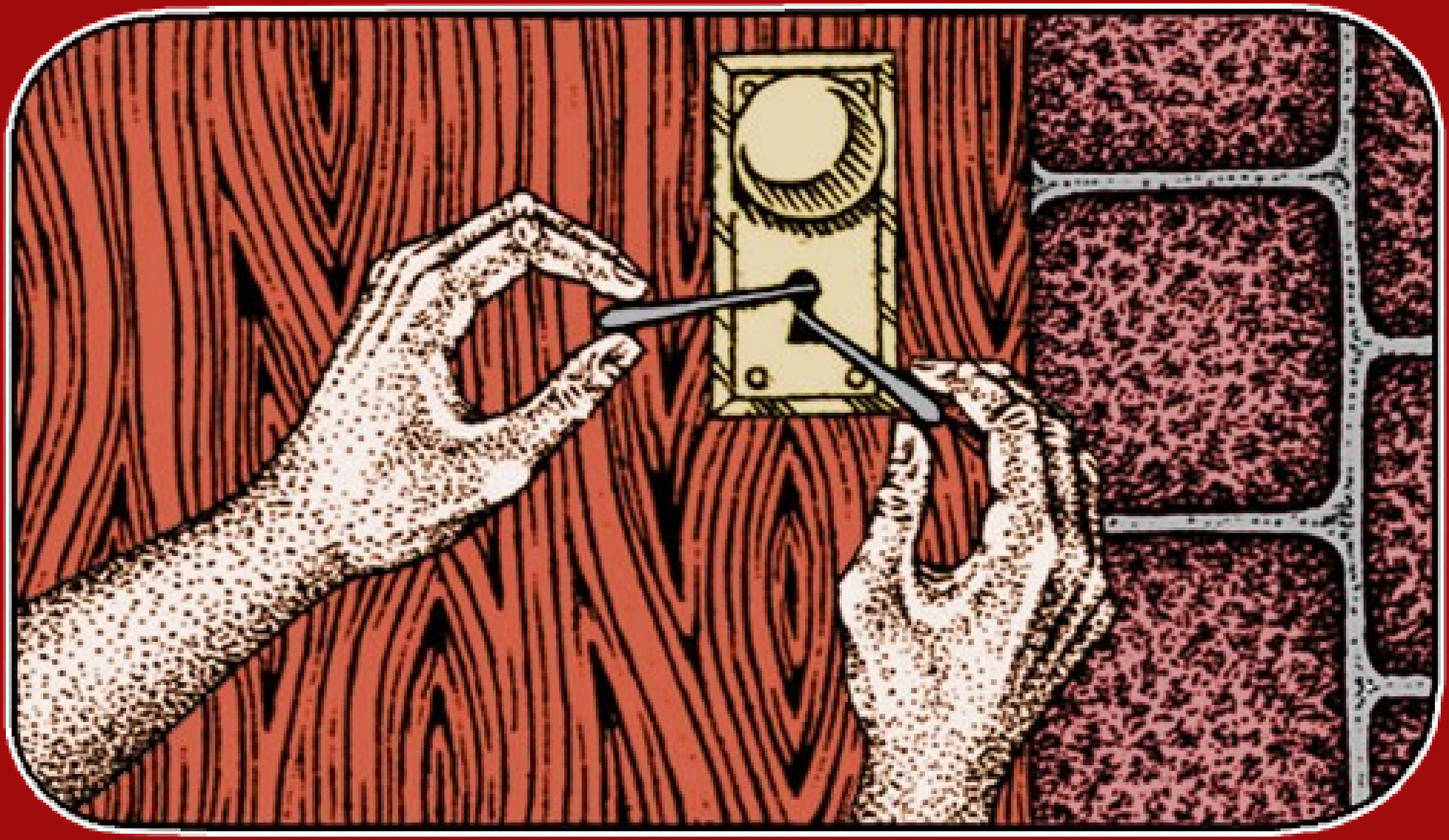
Wafer Lock Usage



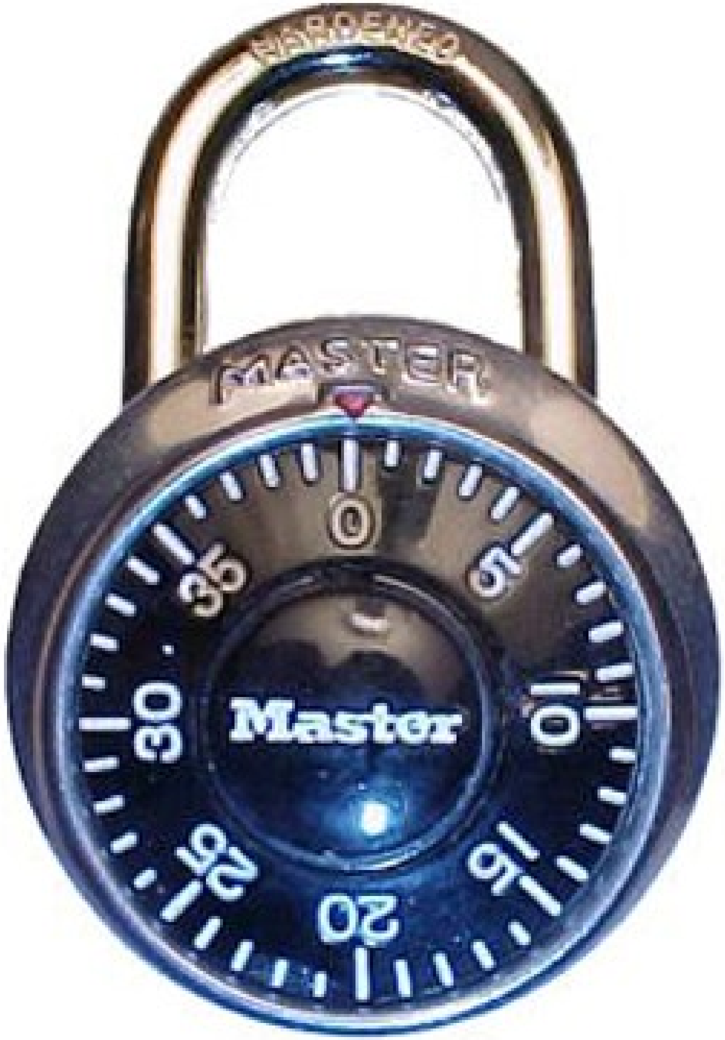
Questions?



Combination Locks



Combination Locks



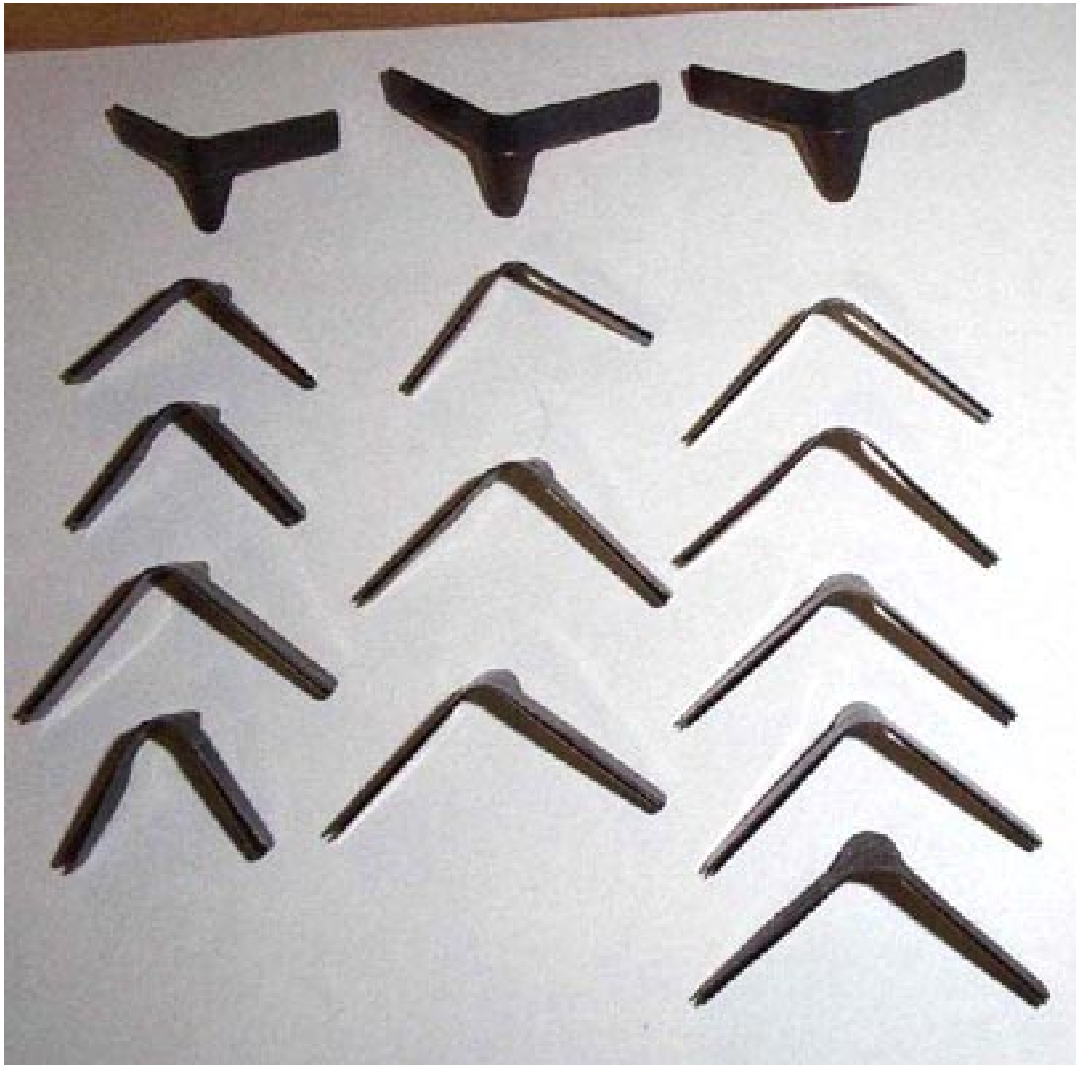
If You Are Doing This...



If You Are Doing This…… What You Are Saying Is This



Padlock Shims



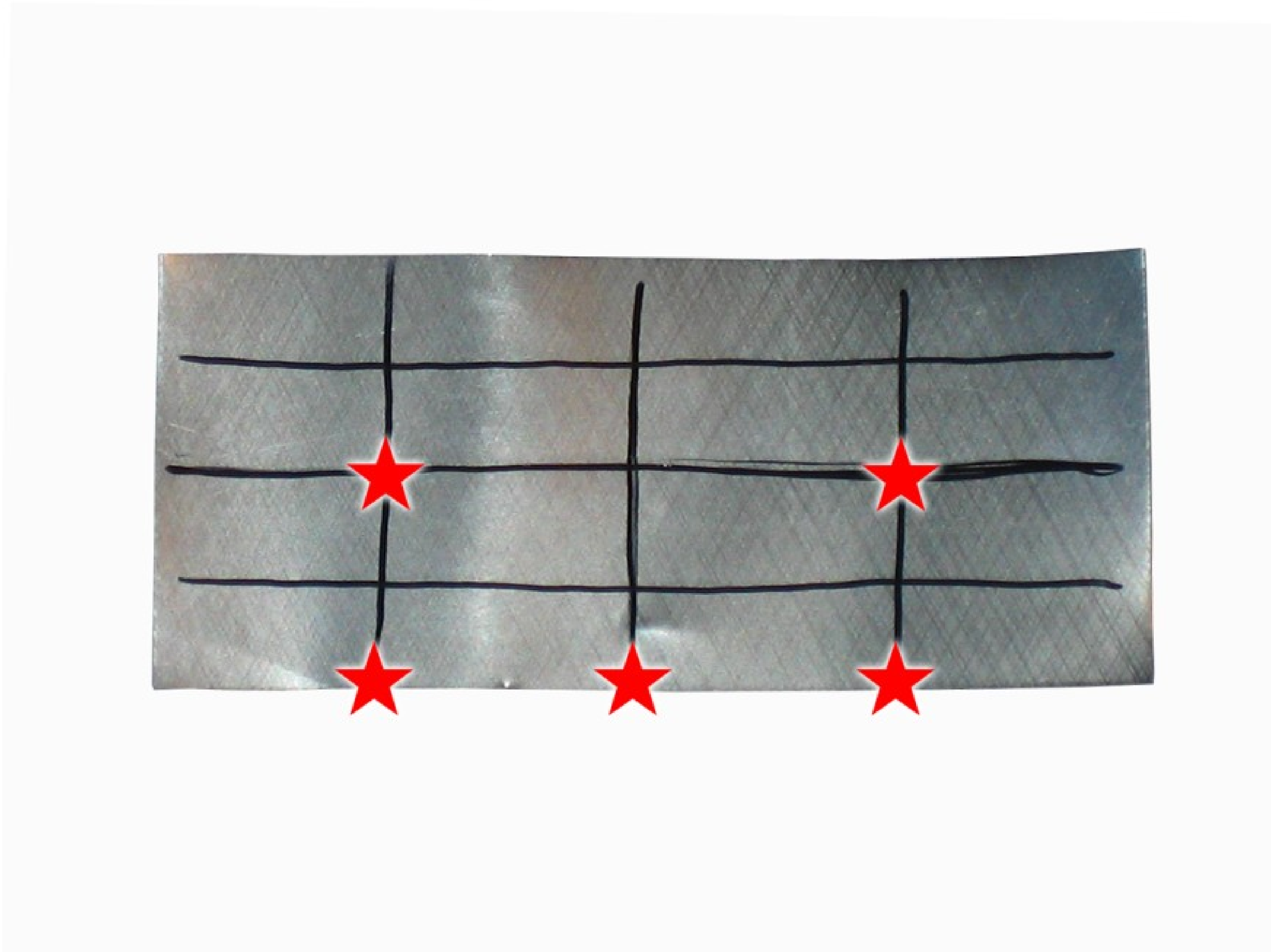
Padlock Shims



Homebrew Padlock Shims



Homebrew Padlock Shims



Homebrew Padlock Shims



Homebrew Padlock Shims



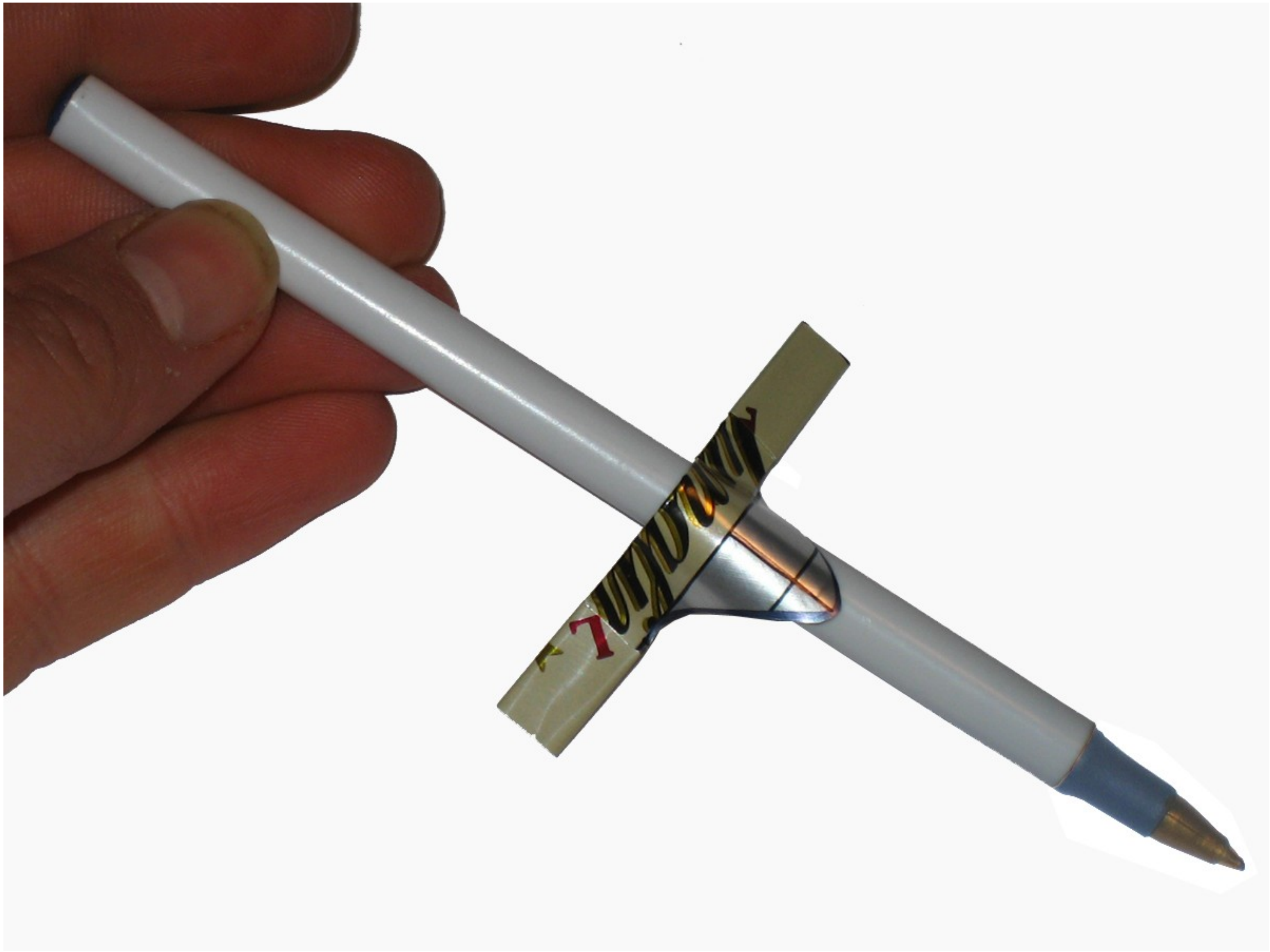
Homebrew Padlock Shims



Homebrew Padlock Shims



Homebrew Padlock Shims



Homebrew Padlock Shims



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A tale of Homebrew Shims



A tale of Homebrew Shims



A tale of Homebrew Shims



A tale of Homebrew Shims



A tale of Homebrew Shims



Single Latch or Dual Latch ?



Shim-Proof Padlocks… Double-Ball Mechanism



Shim-Proof Padlocks… Double-Ball Mechanism







Shim-Proof Padlocks… Double-Ball Mechanism



Shim-Proof Padlocks… Double-Ball Mechanism



Some People Seemingly Don't Know There's a Risk



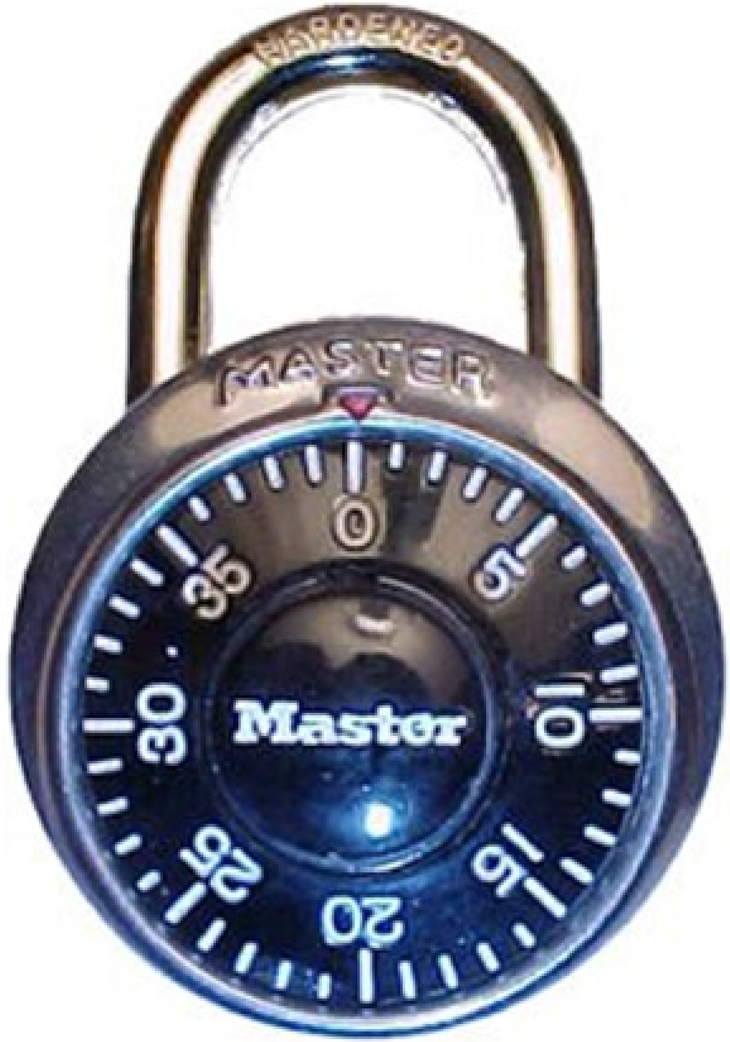
Some People Seemingly Don't Know There's a Risk



Decoding the Combination?



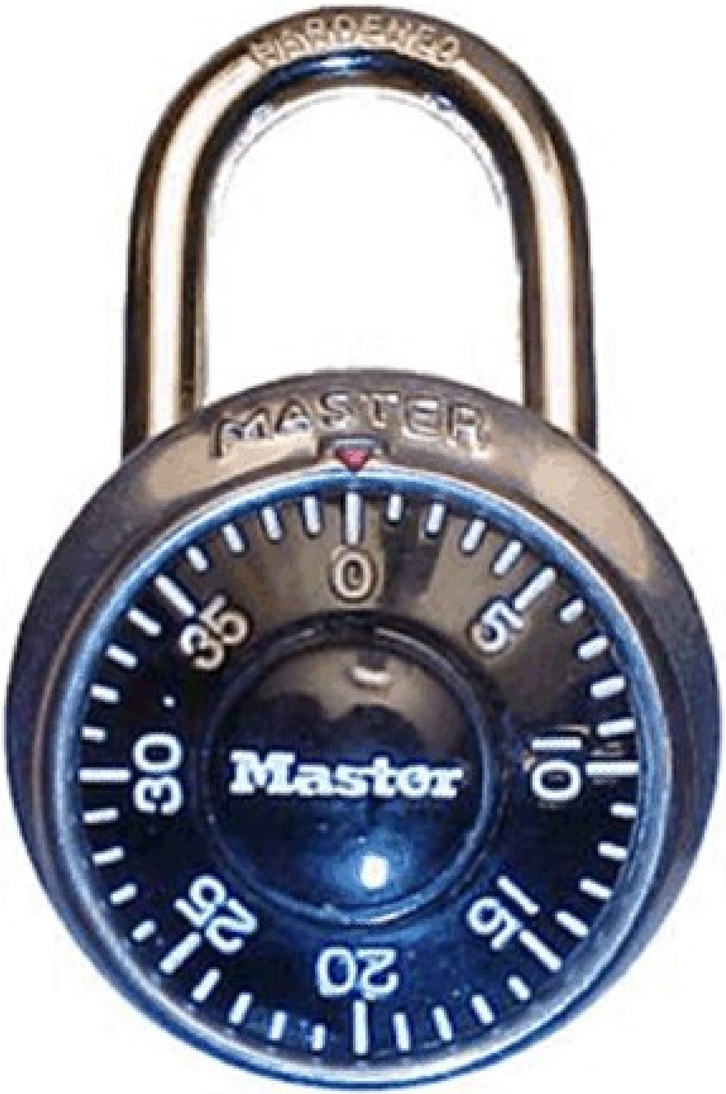
Decoding the Combination



Decoding the Combination



Decoding the Combination



Decoding the Combination



Decoding the Combination



Decoding the Combination



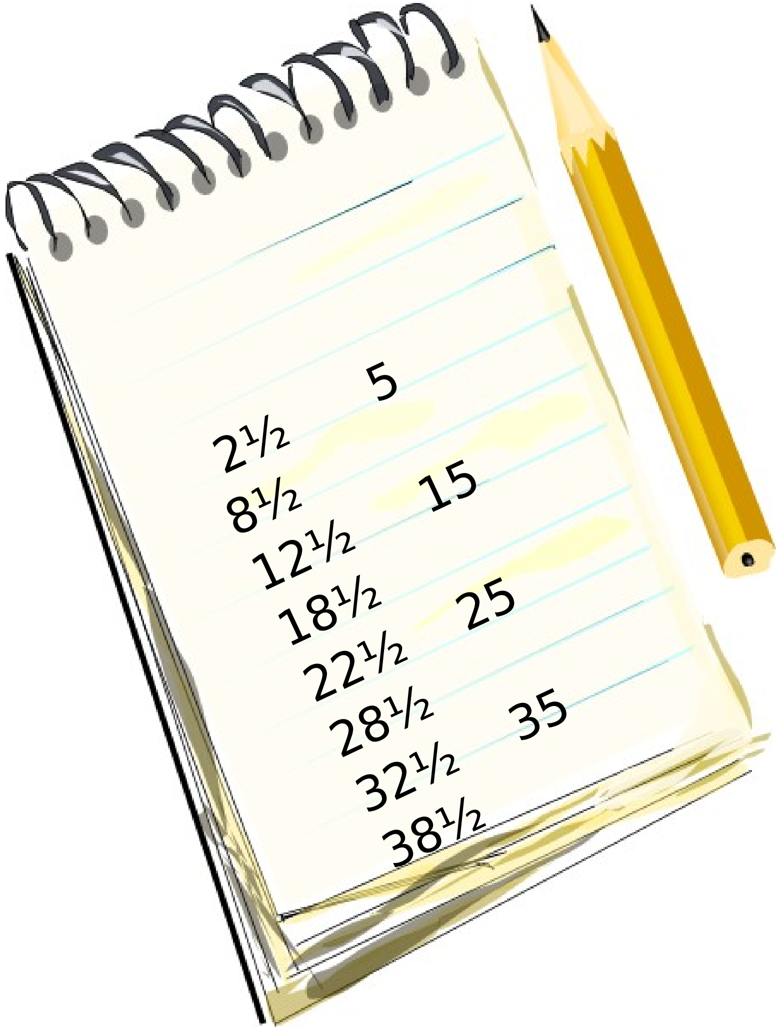
Decoding the Combination



Decoding the Combination

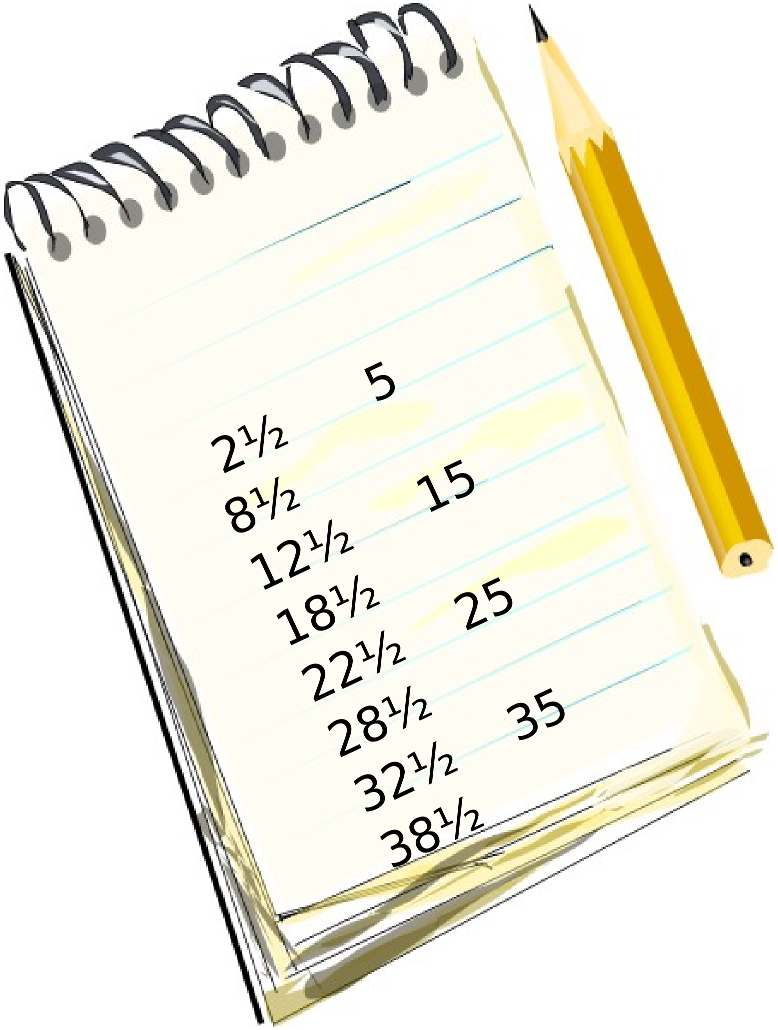


Decoding the Combination





Decoding the Combination





Decoding the Combination



Decoding the Combination



2½ 12½ 22½

32½

Decoding the Combination



2½ 12½ ? 22½

32½

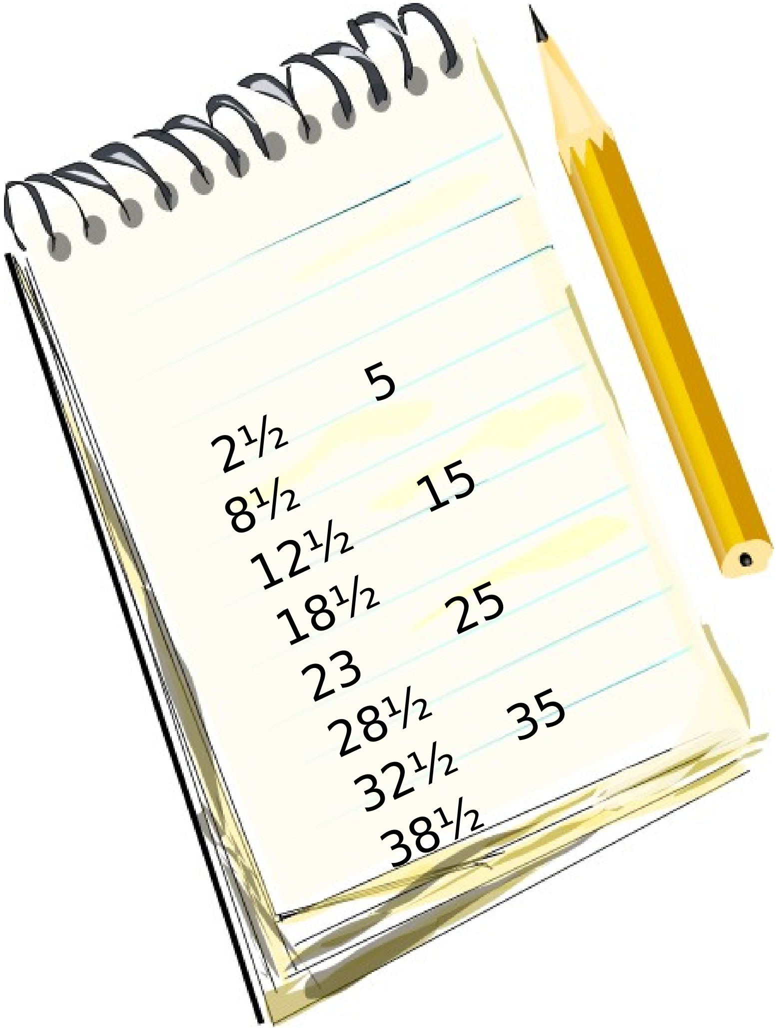
Decoding the Combination



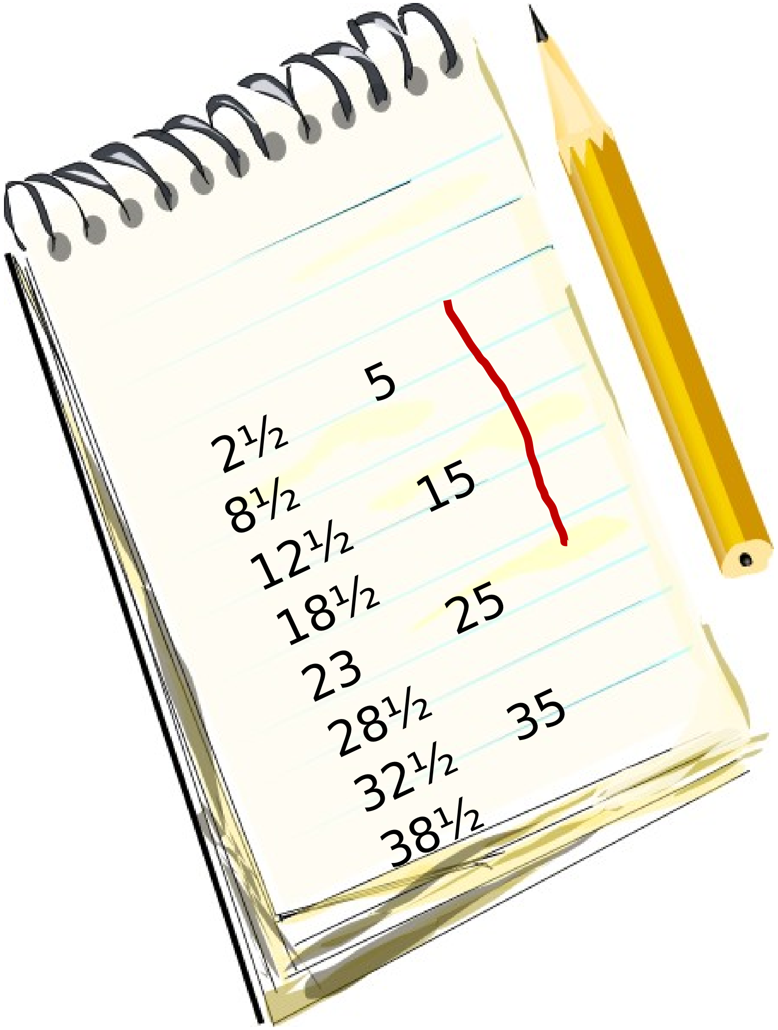
2½ 12½ □ 23

32½

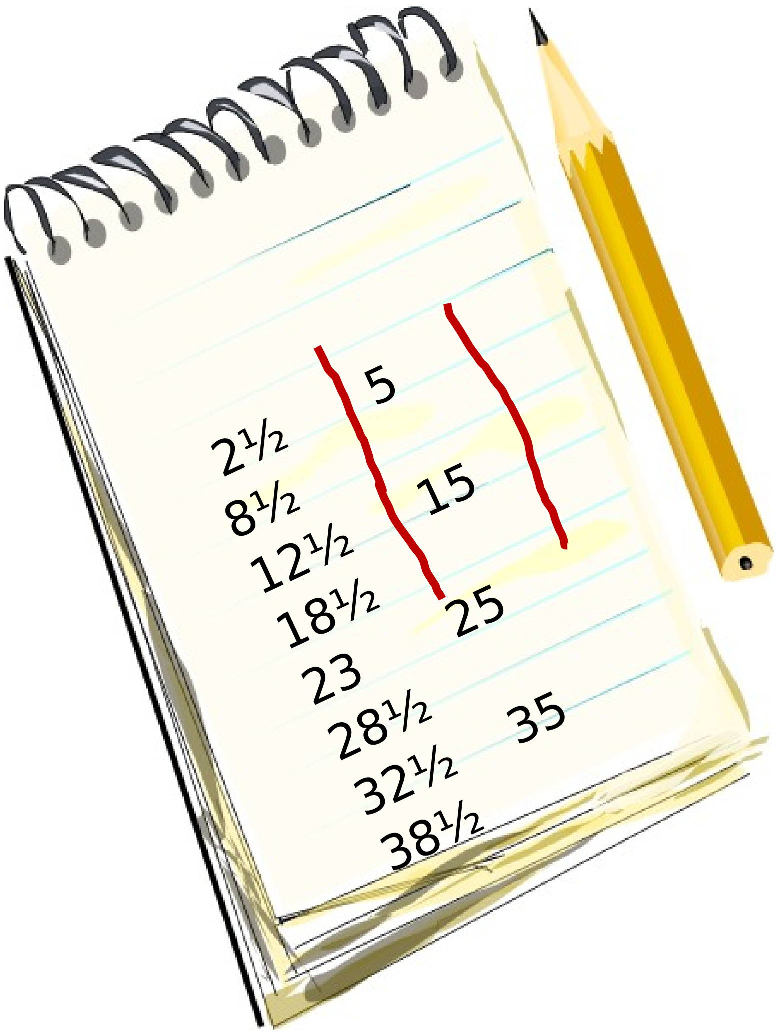
Decoding the Combination



Decoding the Combination



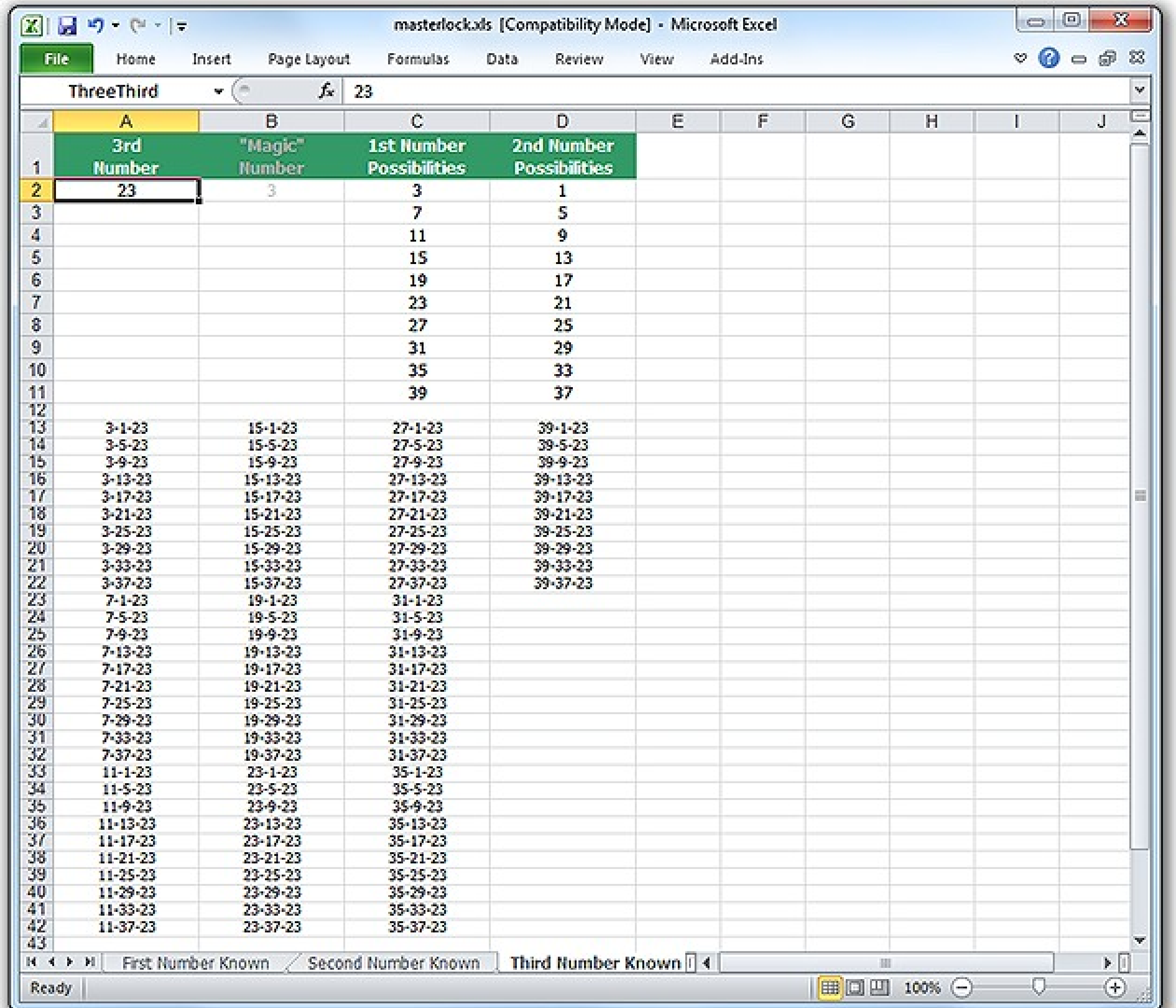
Decoding the Combination



Decoding the Combination



Decoding the Combination



3rd Number	"Magic" Number	1st Number Possibilities	2nd Number Possibilities
23	3	3	1
		7	5
		11	9
		15	13
		19	17
		23	21
		27	25
		31	29
		35	33
		39	37
3-1-23	15-1-23	27-1-23	39-1-23
3-5-23	15-5-23	27-5-23	39-5-23
3-9-23	15-9-23	27-9-23	39-9-23
3-13-23	15-13-23	27-13-23	39-13-23
3-17-23	15-17-23	27-17-23	39-17-23
3-21-23	15-21-23	27-21-23	39-21-23
3-25-23	15-25-23	27-25-23	39-25-23
3-29-23	15-29-23	27-29-23	39-29-23
3-33-23	15-33-23	27-33-23	39-33-23
3-37-23	15-37-23	27-37-23	39-37-23
7-1-23	19-1-23	31-1-23	
7-5-23	19-5-23	31-5-23	
7-9-23	19-9-23	31-9-23	
7-13-23	19-13-23	31-13-23	
7-17-23	19-17-23	31-17-23	
7-21-23	19-21-23	31-21-23	
7-25-23	19-25-23	31-25-23	
7-29-23	19-29-23	31-29-23	
7-33-23	19-33-23	31-33-23	
7-37-23	19-37-23	31-37-23	
11-1-23	23-1-23	35-1-23	
11-5-23	23-5-23	35-5-23	
11-9-23	23-9-23	35-9-23	
11-13-23	23-13-23	35-13-23	
11-17-23	23-17-23	35-17-23	
11-21-23	23-21-23	35-21-23	
11-25-23	23-25-23	35-25-23	
11-29-23	23-29-23	35-29-23	
11-33-23	23-33-23	35-33-23	
11-37-23	23-37-23	35-37-23	

http://deviating.net/lockpicking/media/masterlock.xls

Decoding Multi-Wheel Combinations









A New Kind of Combination Padlock



A New Kind of Combination Padlock



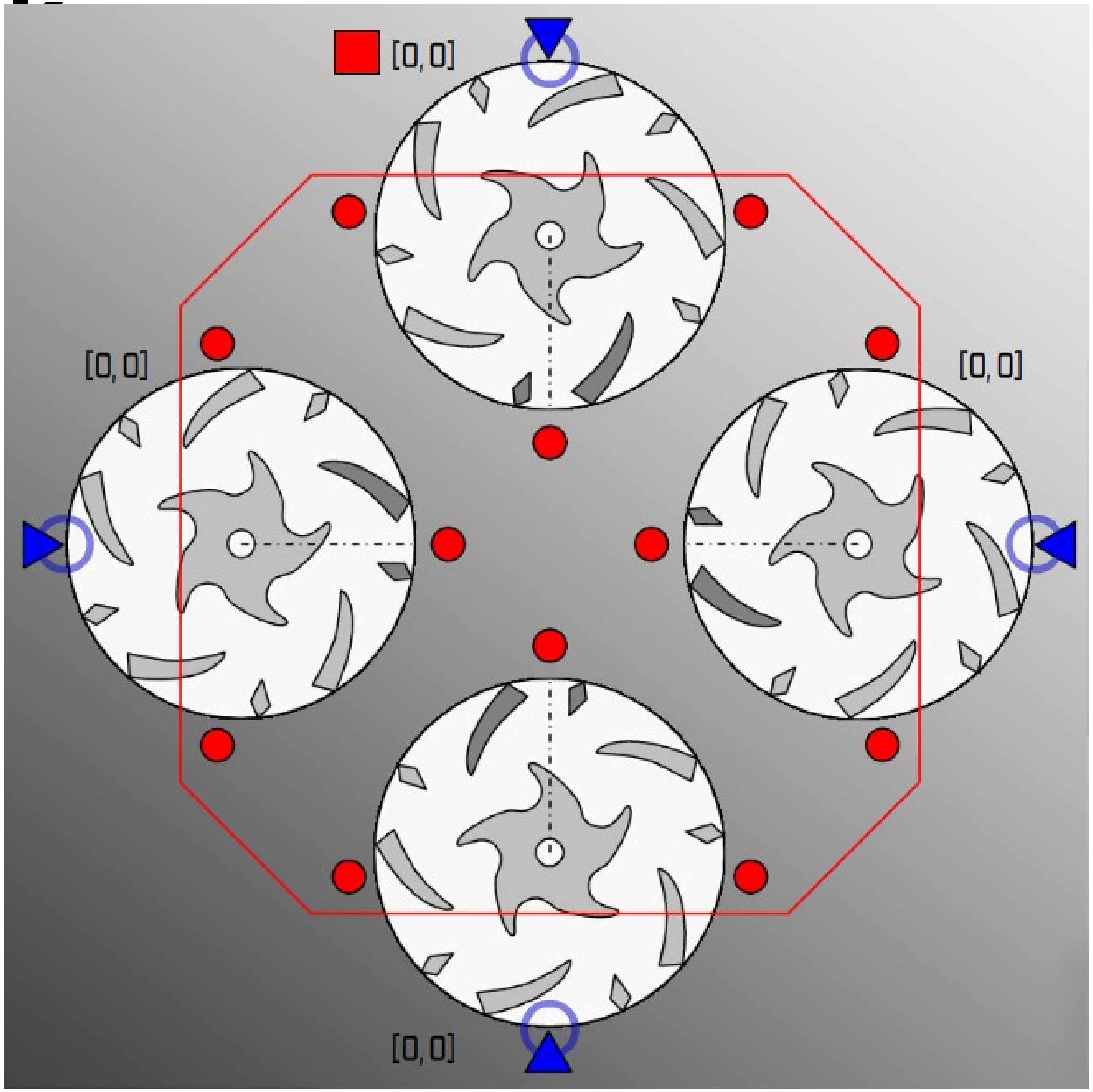
A New Kind of Combination Padlock



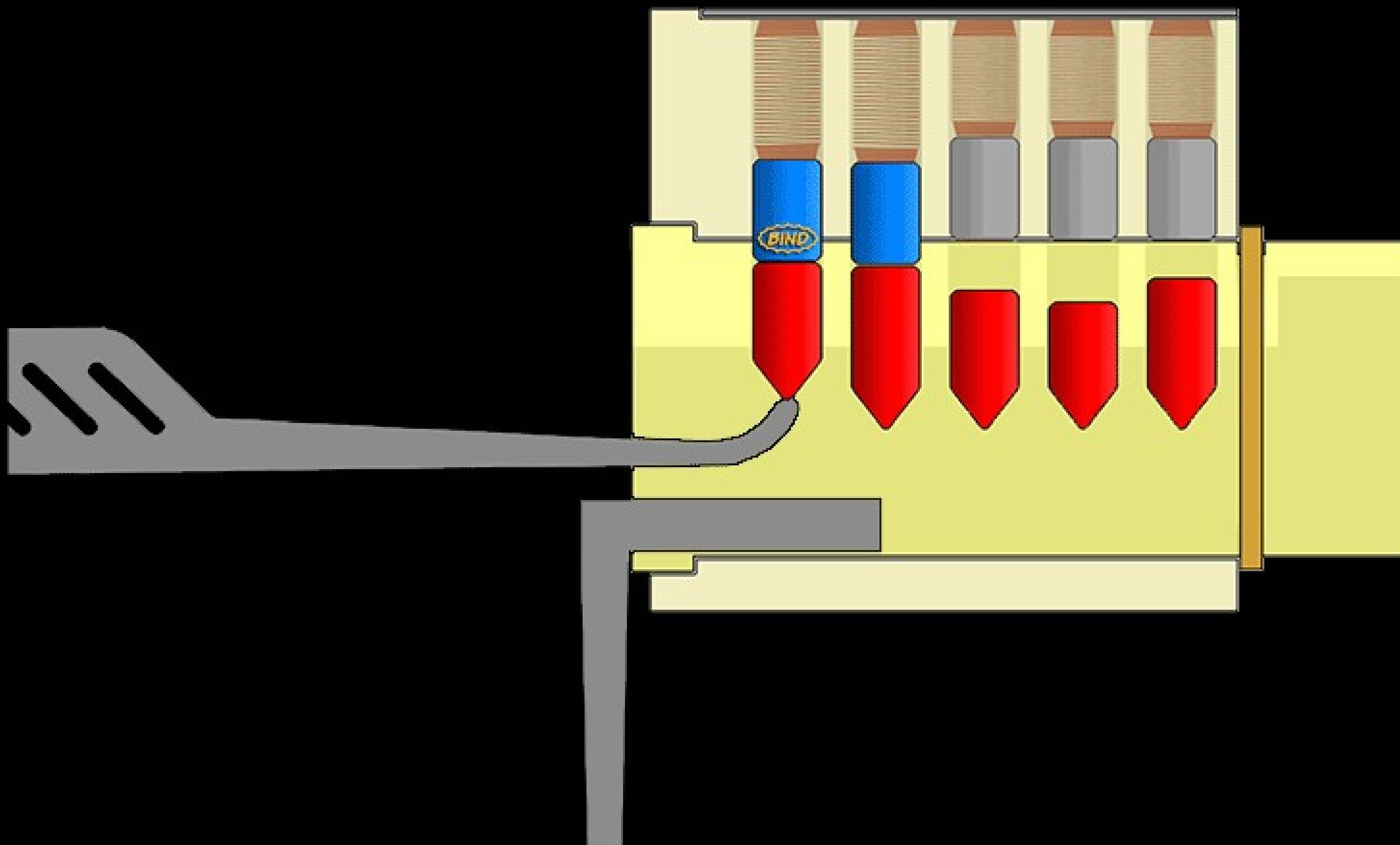
A New Kind of Combination Padlock



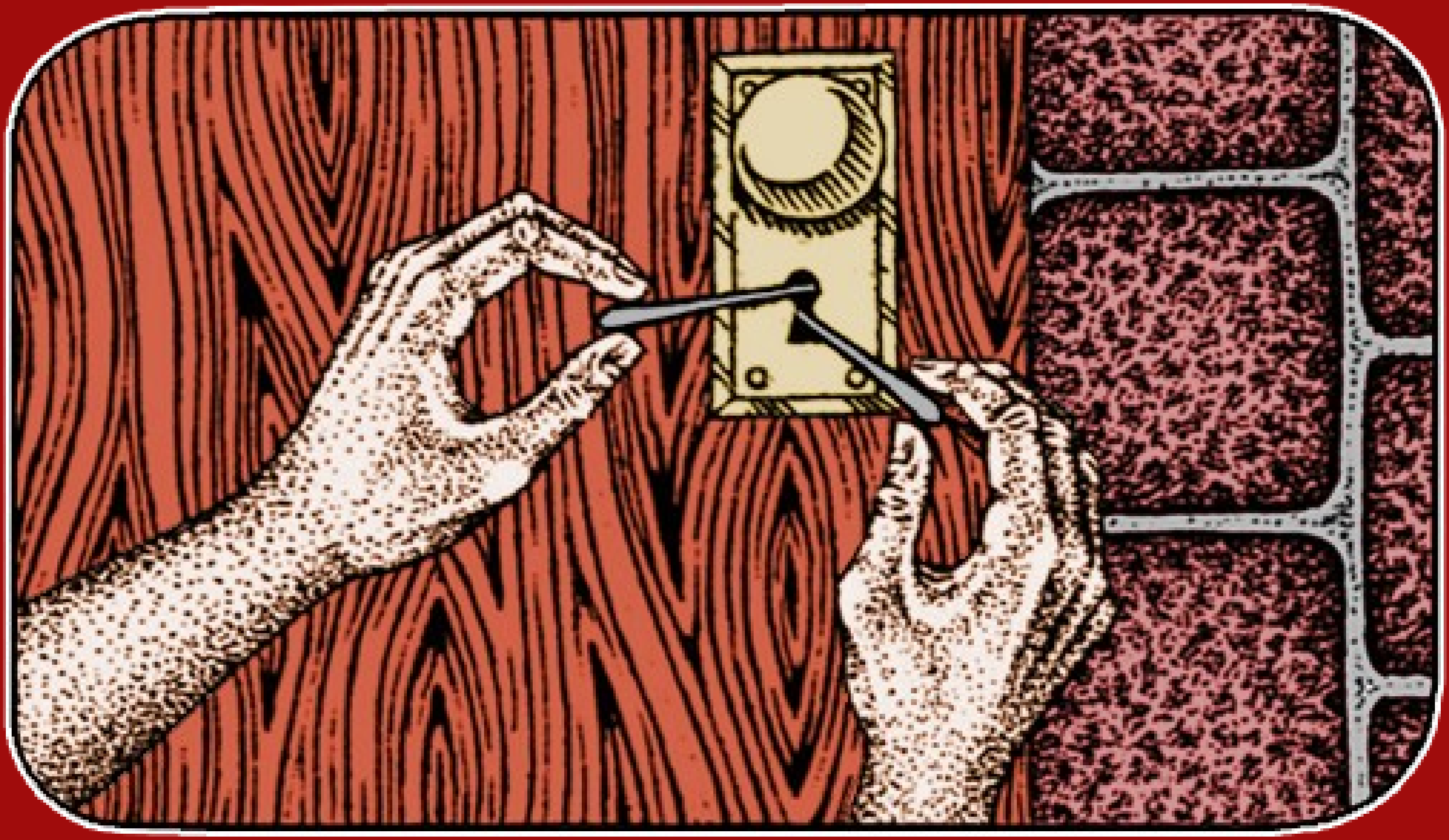
A New Kind of Combination Padlock



Questions?



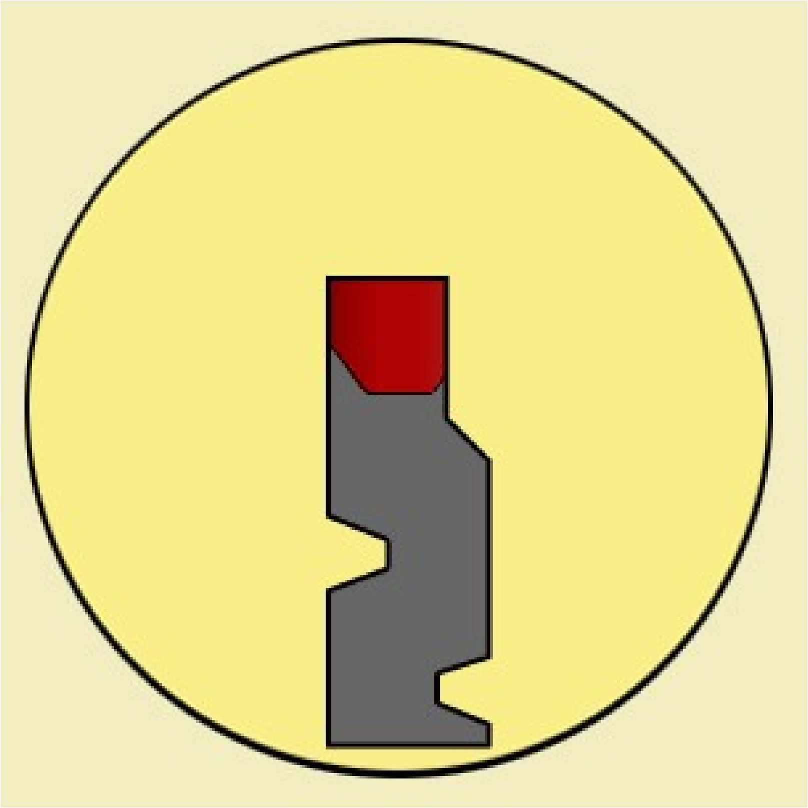
Pick-Resistant Locks



Pick-Resistant Keyways

Simple…

… straigh



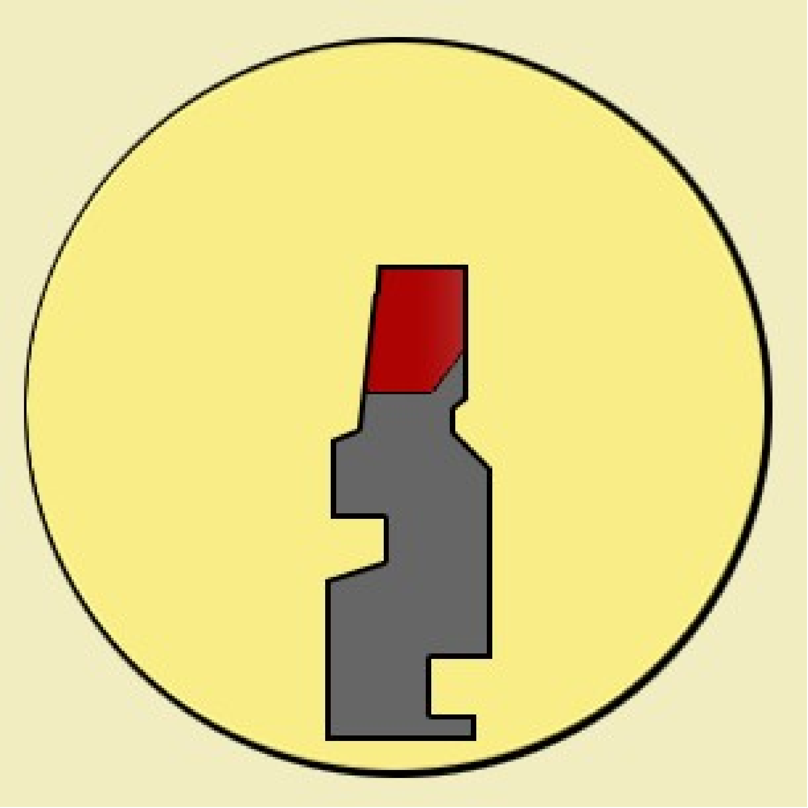
Pick-Resistant Keyways

Simple…

… straigh

Medium…

… straigh



Pick-Resistant Keyways

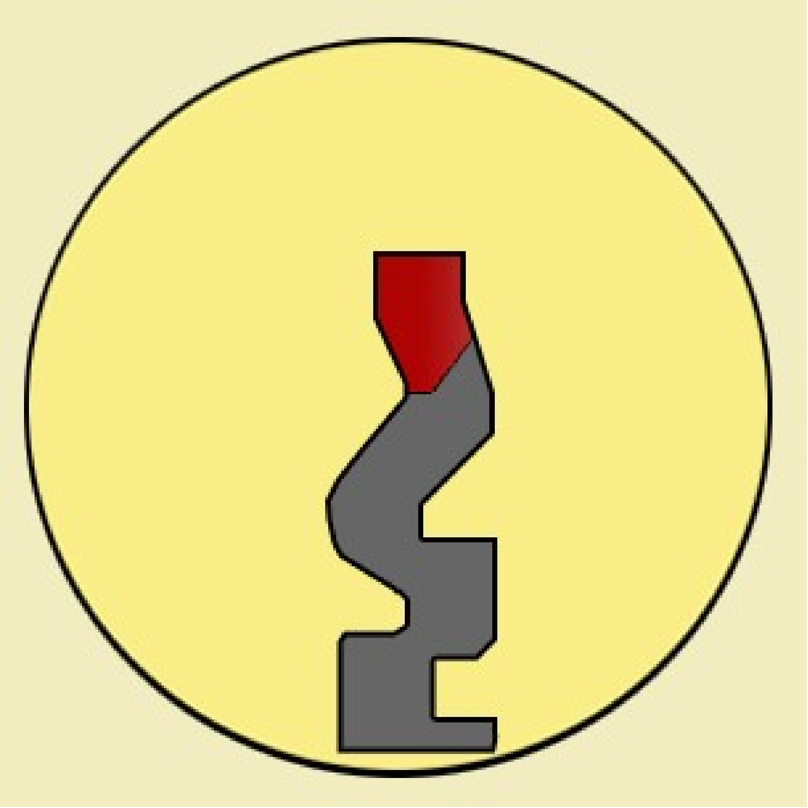
Simple…

… straigh

Medium…

… straigh

Complex…



Pick-Resistant Keyways

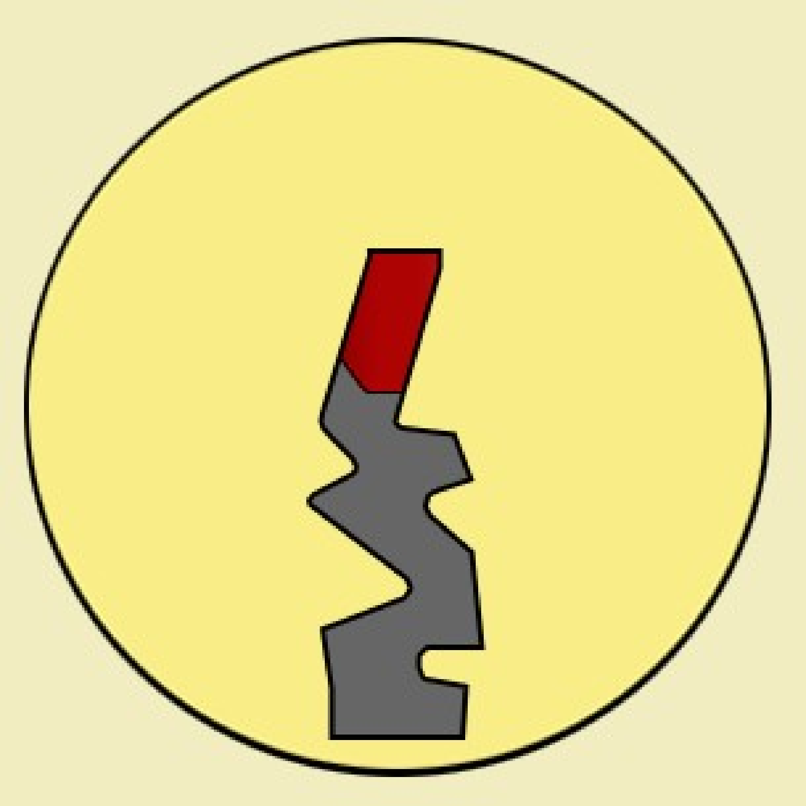
Simple...

... straigh

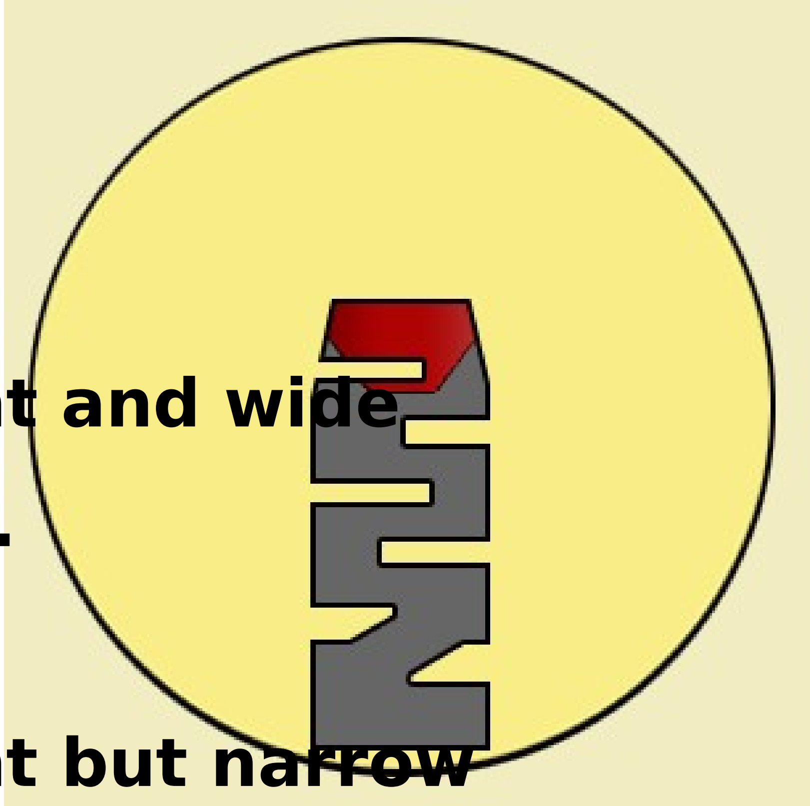
Medium...

... straigh

Complex...



Pick-Resistant Keyways



Simple…

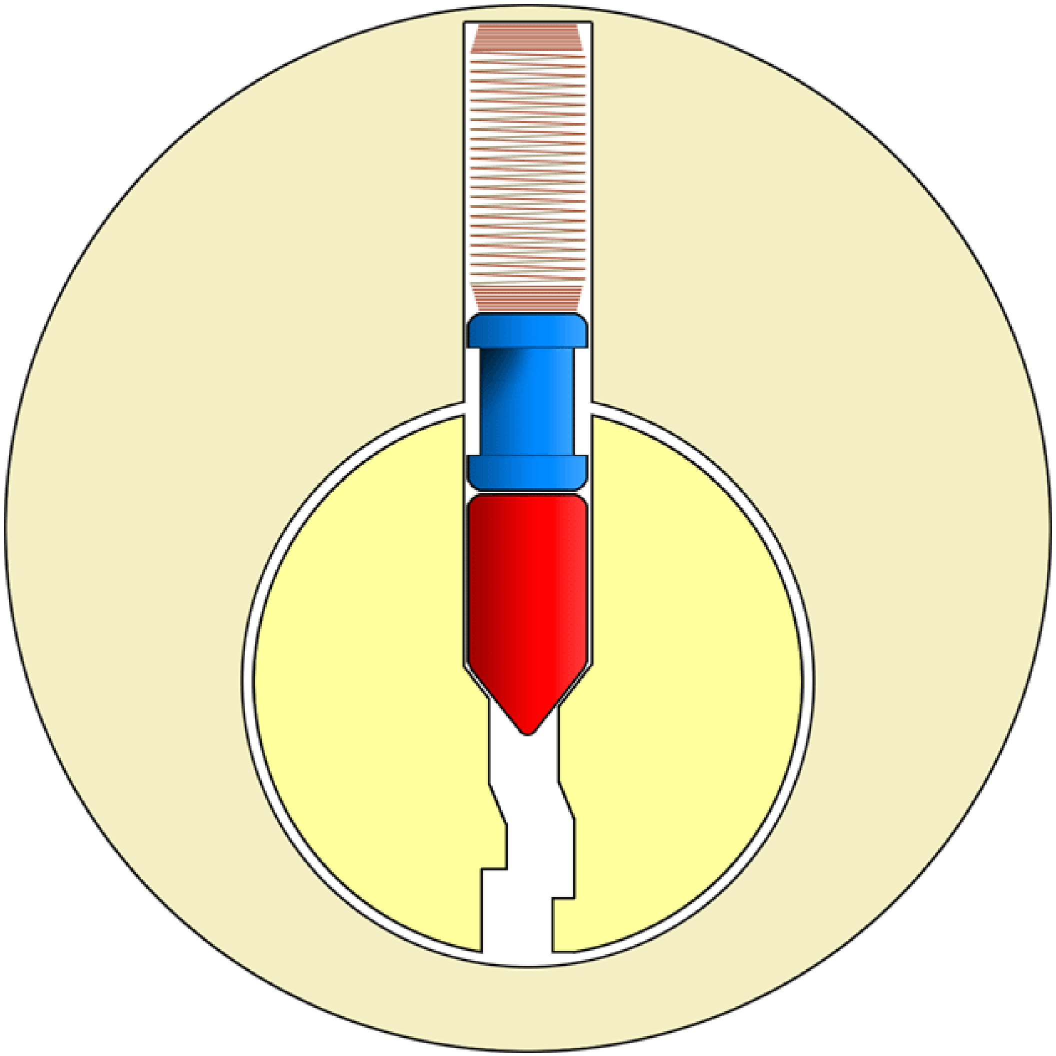
… straight and wide

Medium…

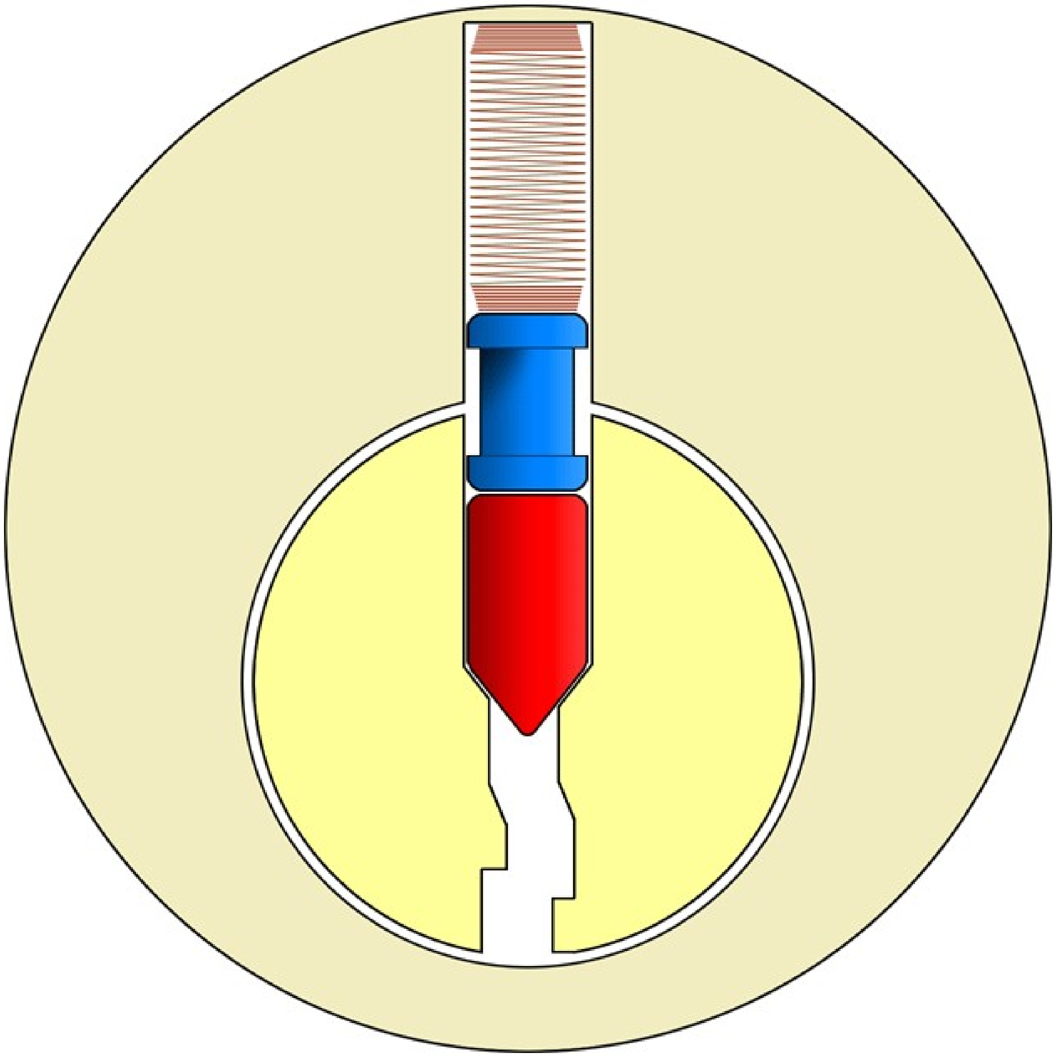
… straight but narrow

Complex…

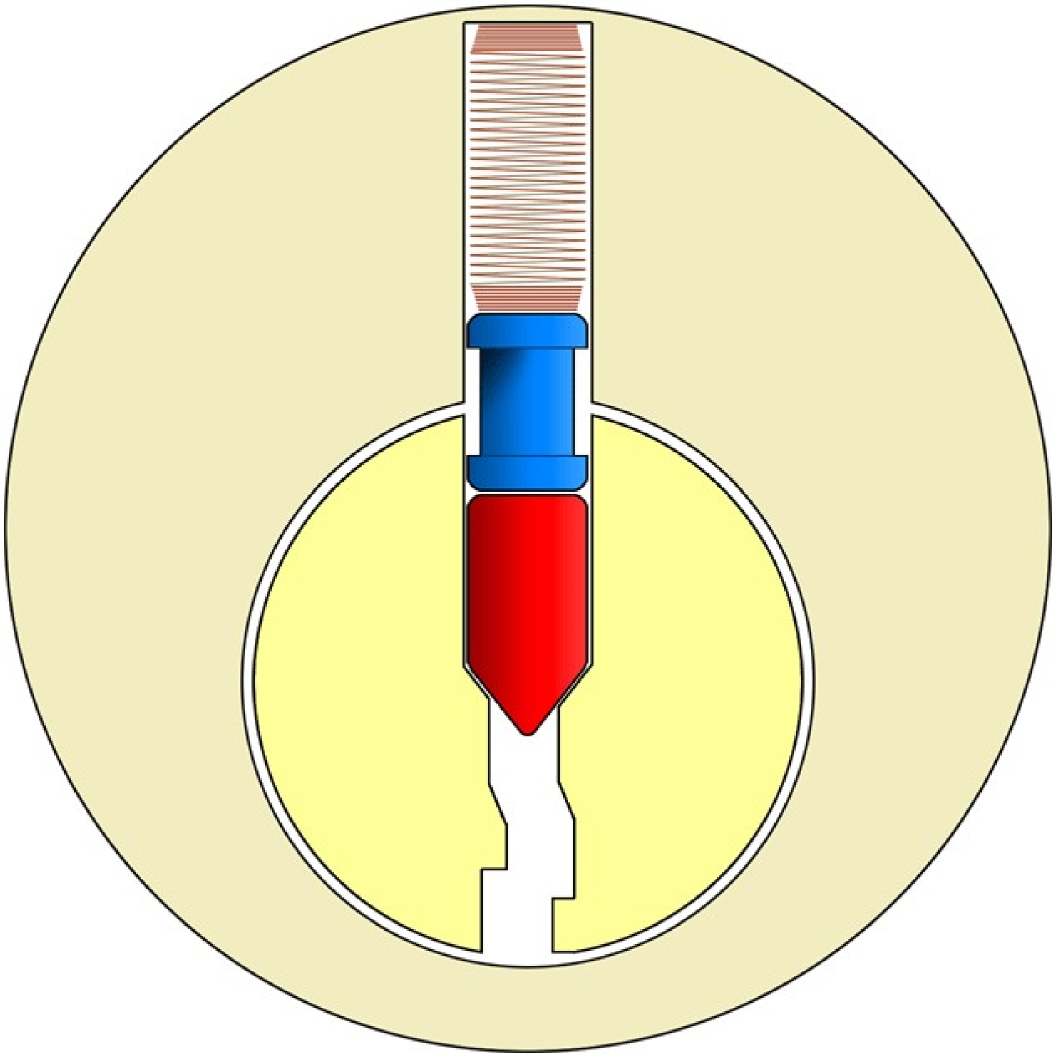
Pick-Resistant Pins



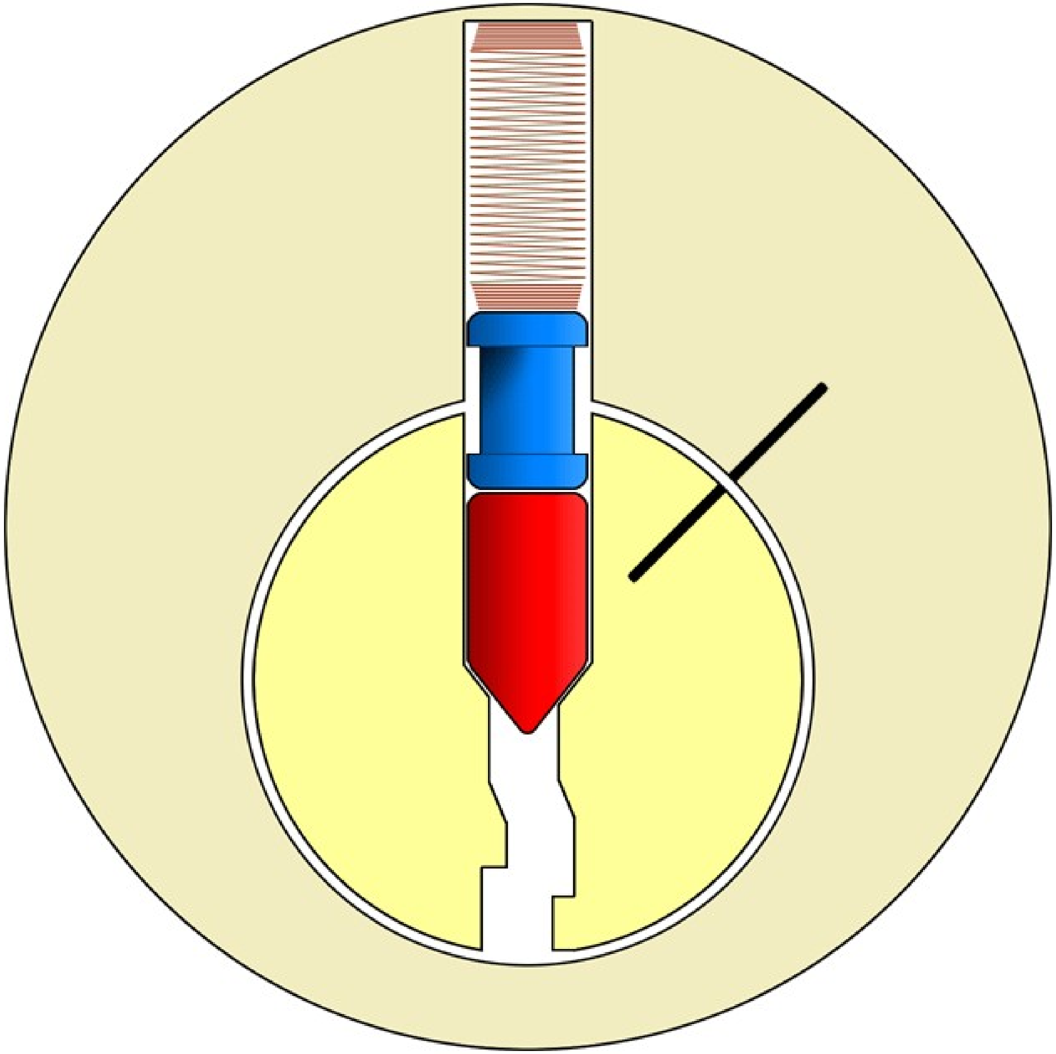
Pick-Resistant Pins – Spool Pin



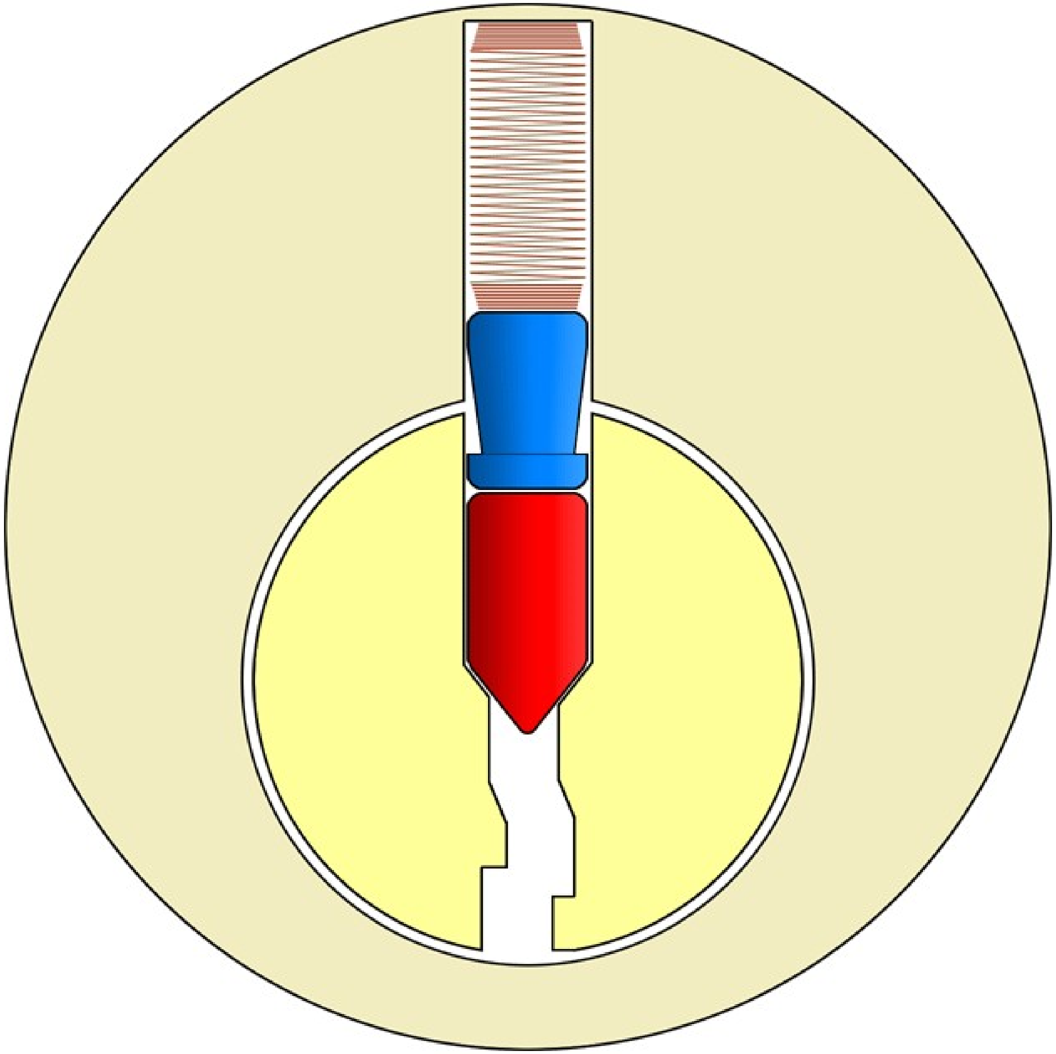
Pick-Resistant Pins – Spool Pin Binding



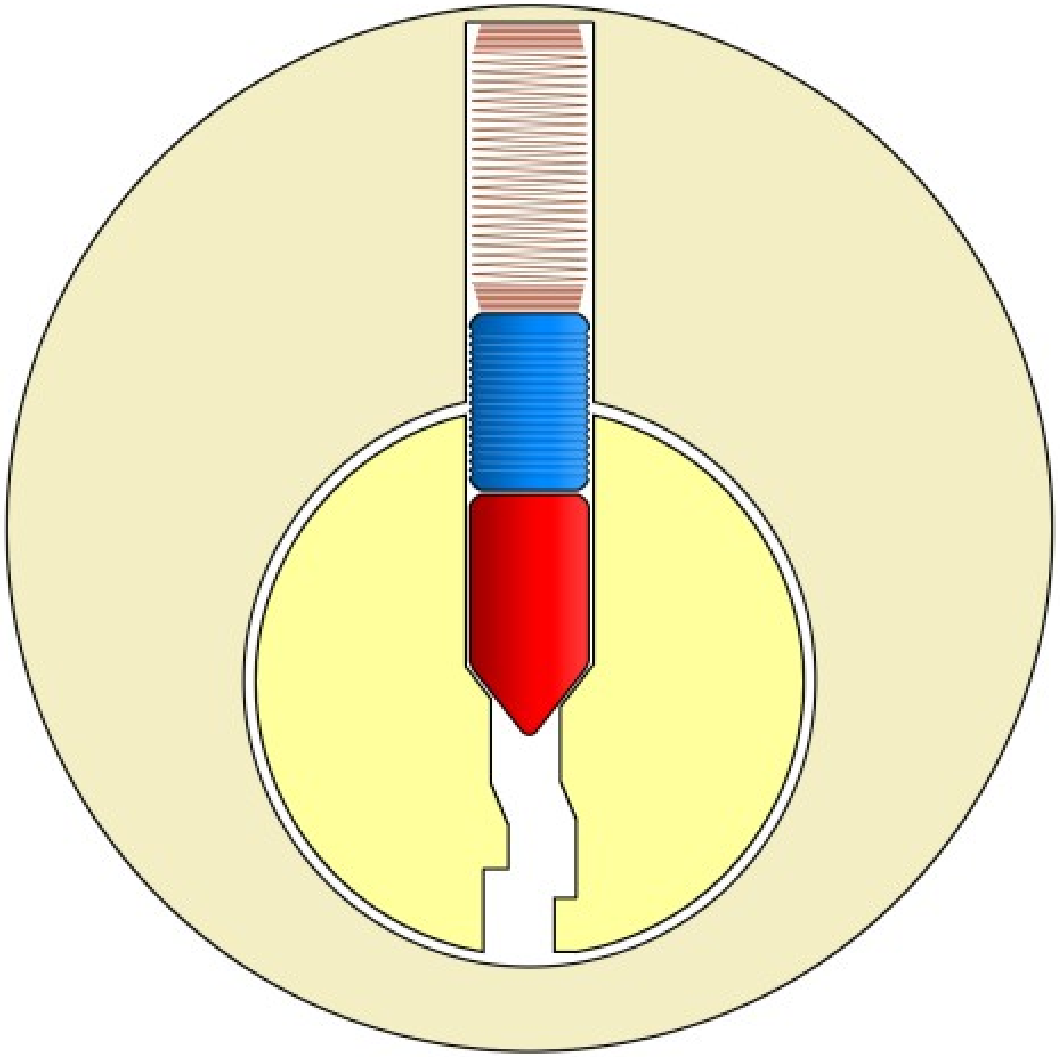
Pick-Resistant Pins – Spool Pin Picking



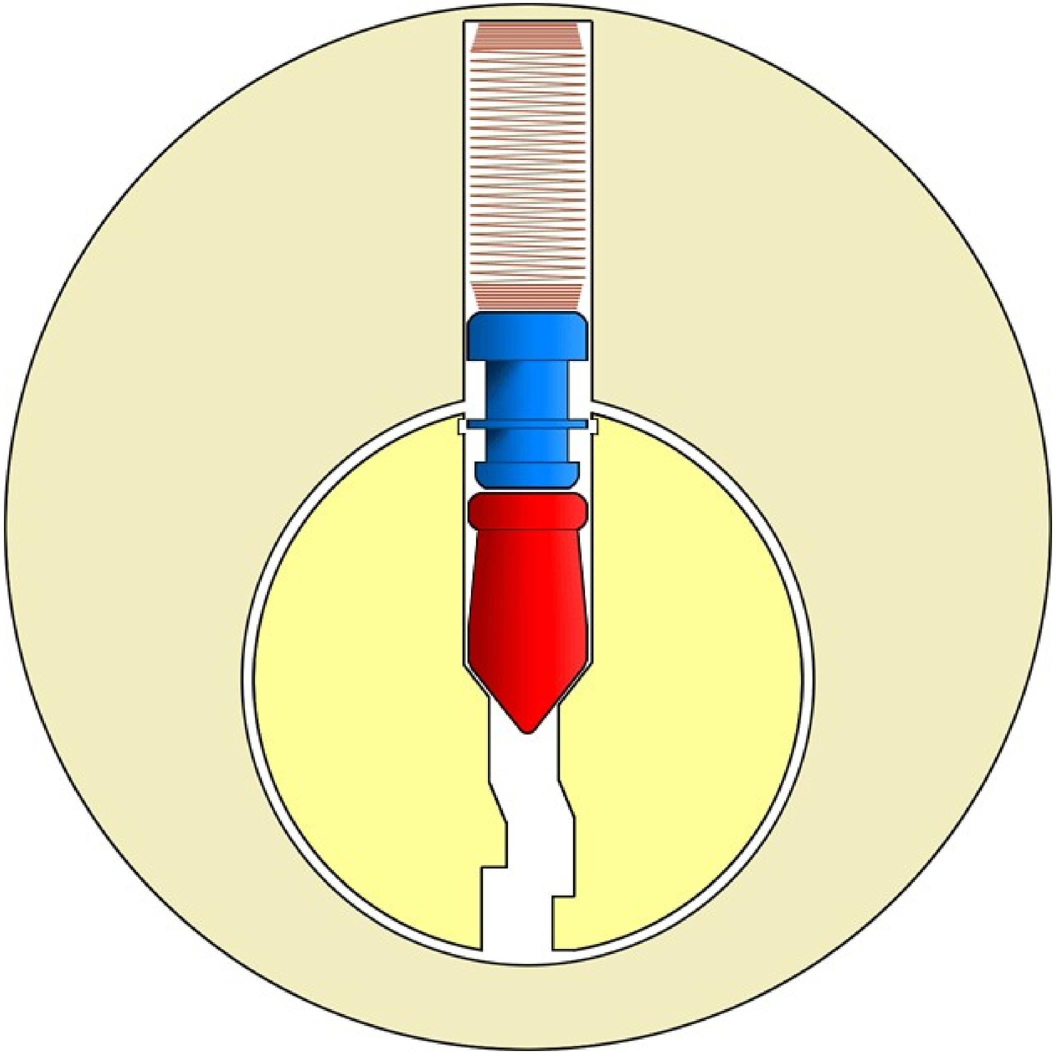
Pick-Resistant Pins – Mushroom Pin



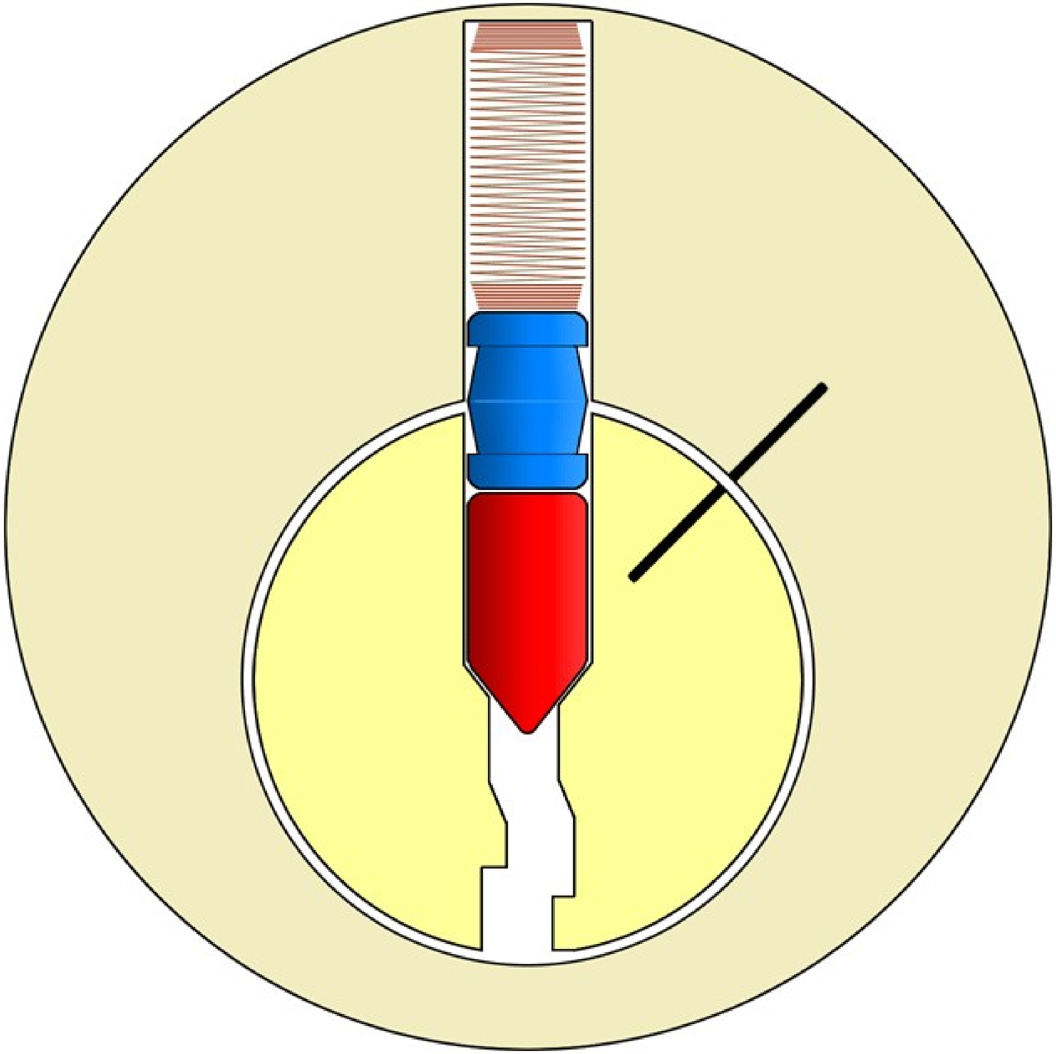
Pick-Resistant Pins – Serrated Pin



Pick-Resistant Pins – ASSA "Sneaky" Pin



Pick-Resistant Pins – TrioVing "Double Mushroom" Pin



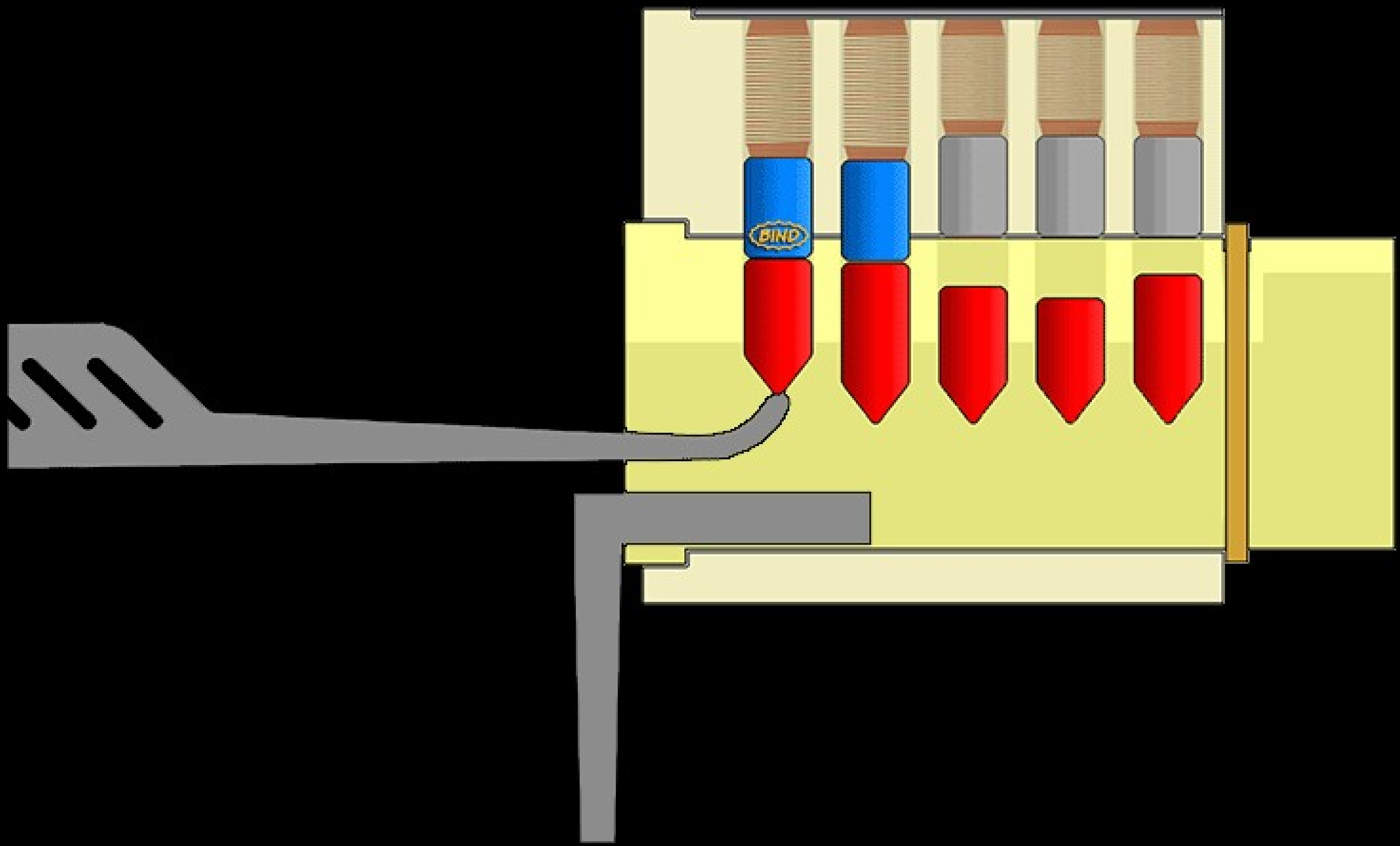
Pick-Resistant Locks

a substantial improvement...

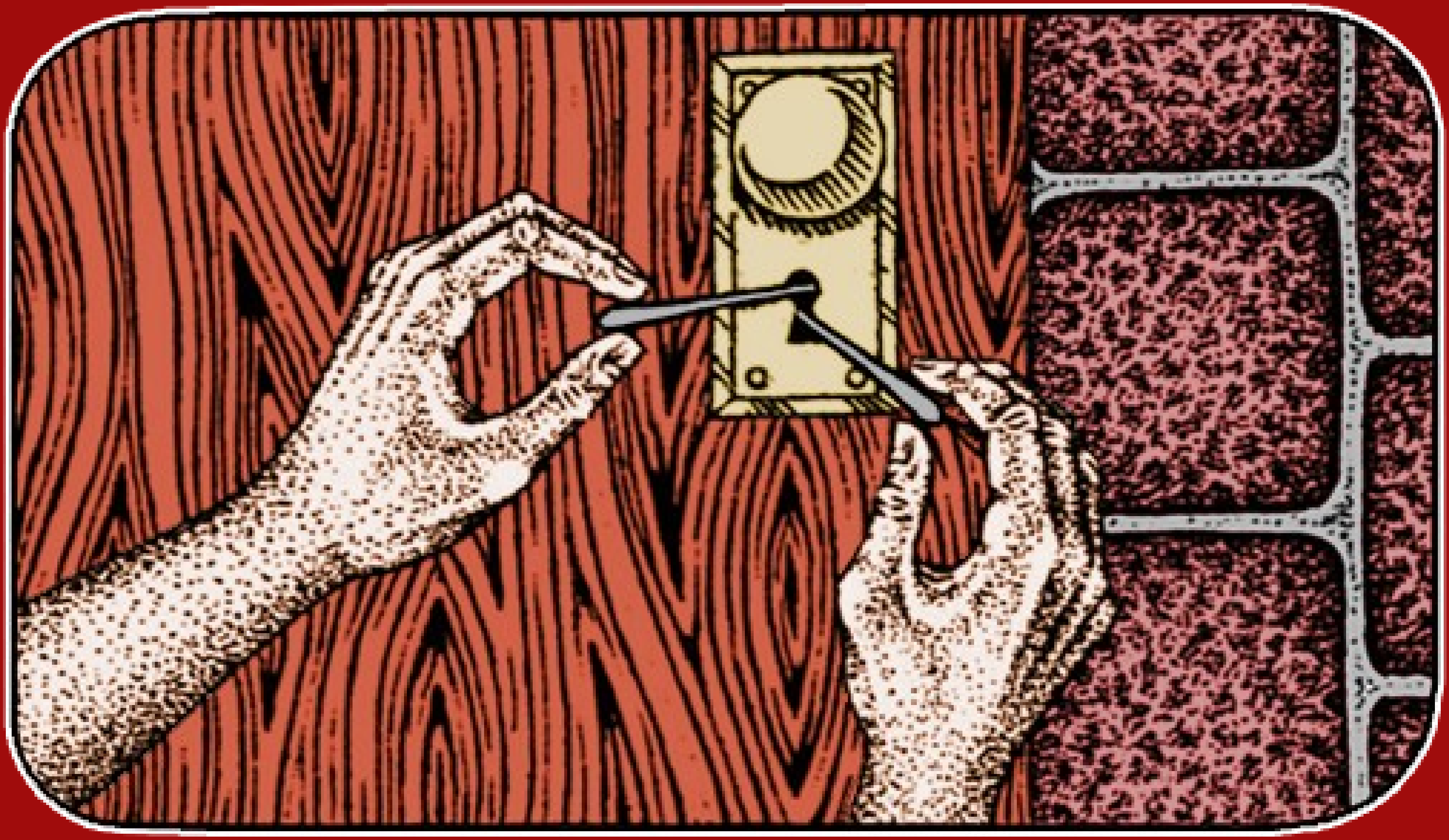


...can be picked, but only with much skill and time

Questions?



Bumping Attacks



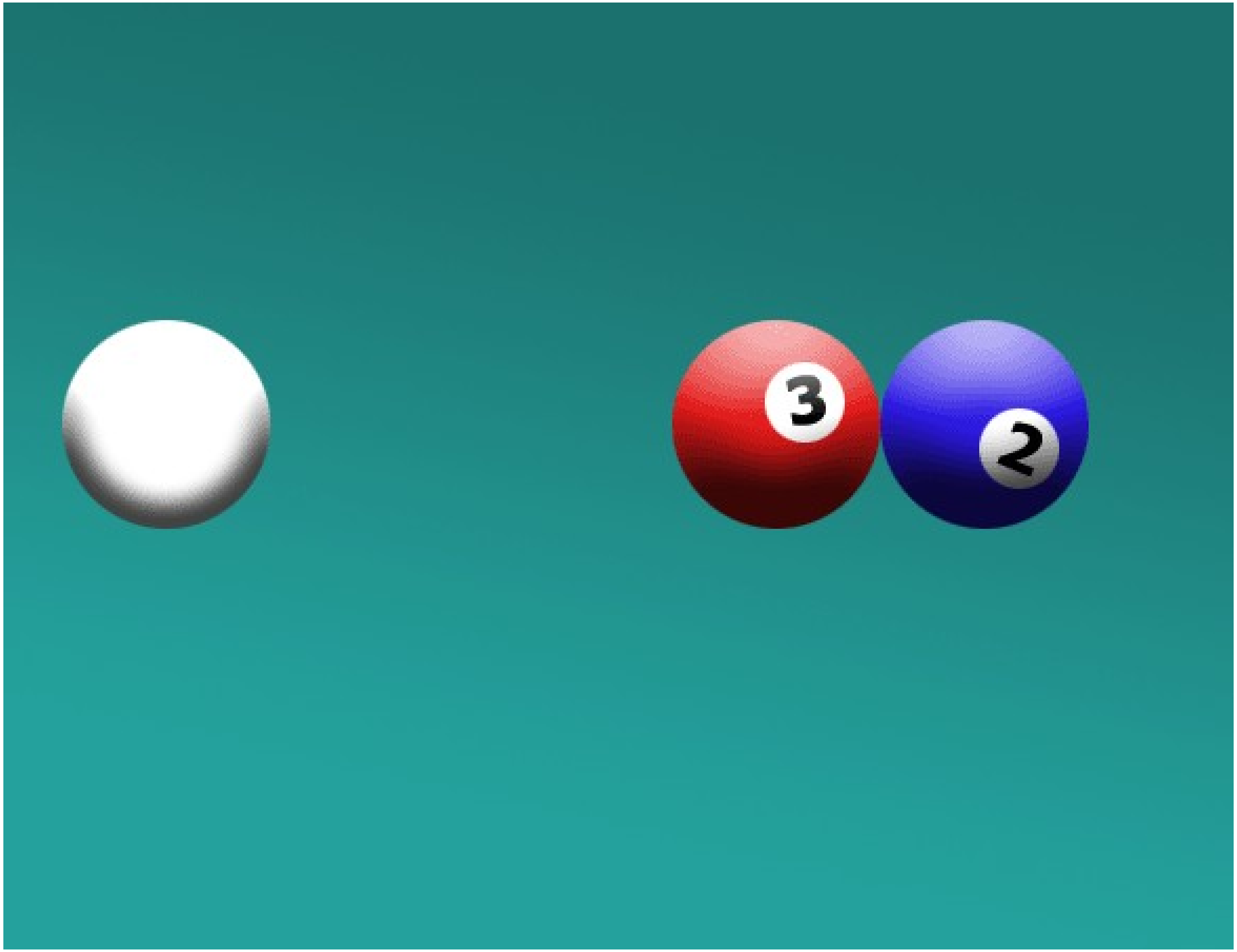
Lock Bumping

- Just a Special Key
- Little Special Skill
- Many Locks are Vulnerable
- Exploit Related to Pick Gun P[illegible]s

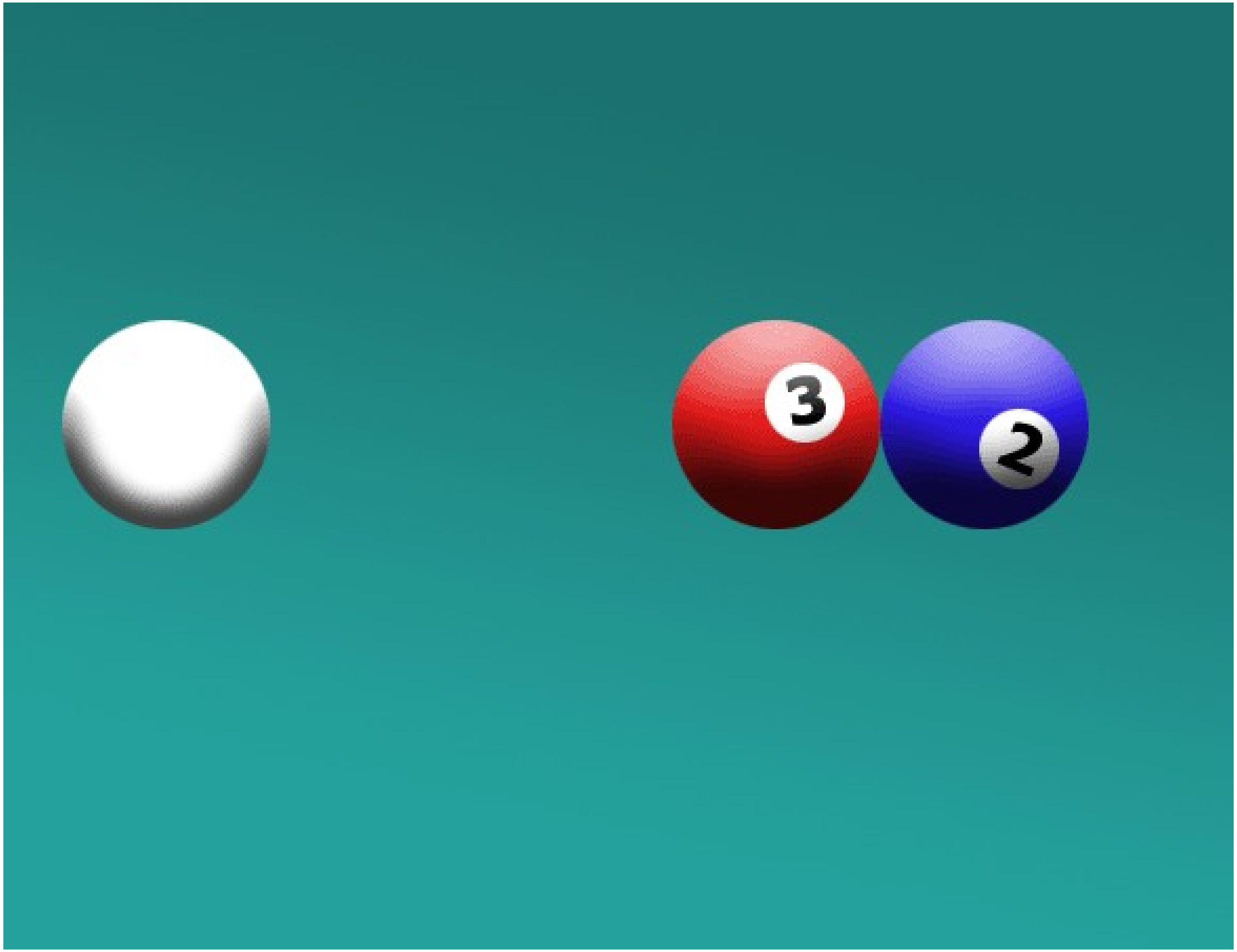




Lock Bumping



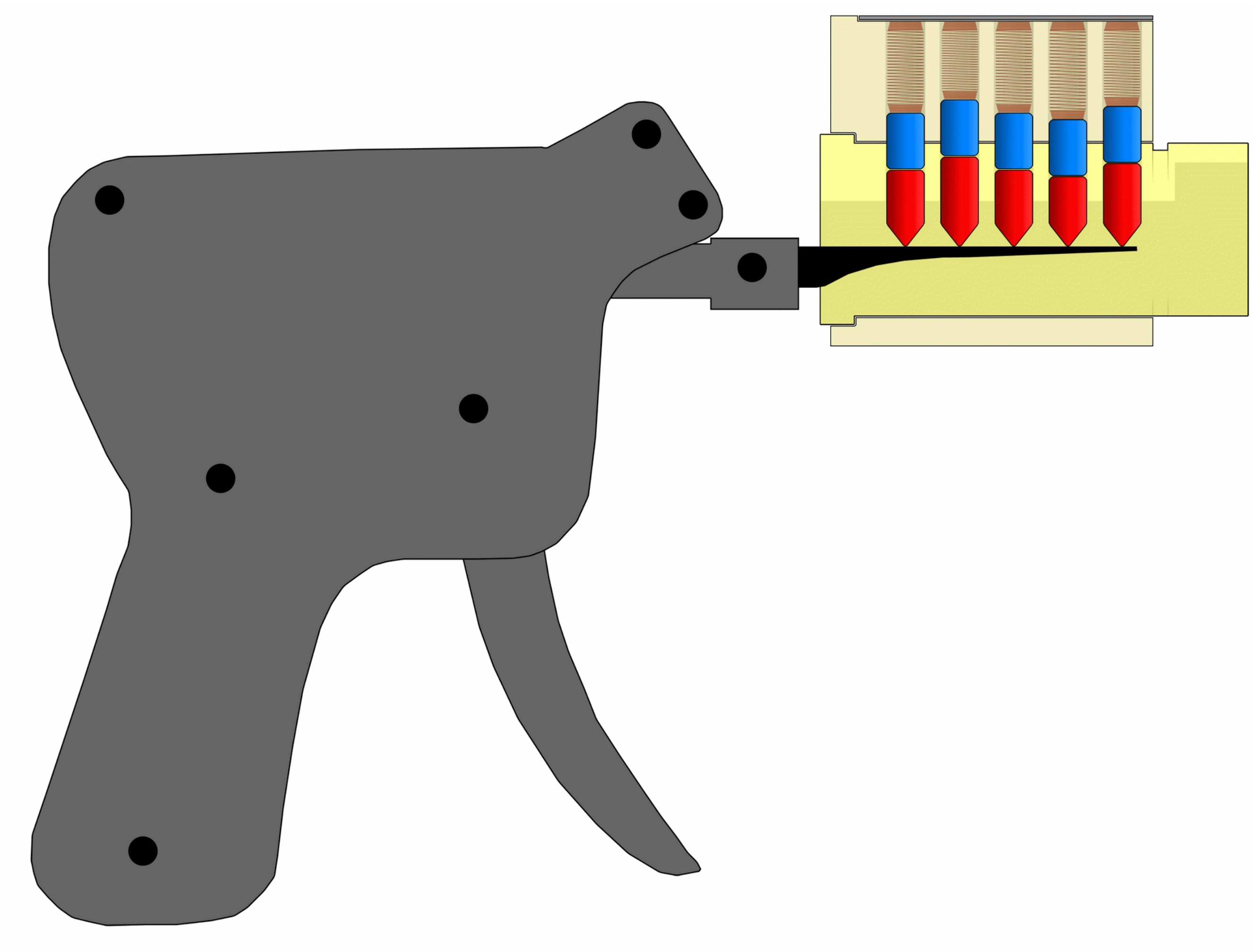
Lock Bumping



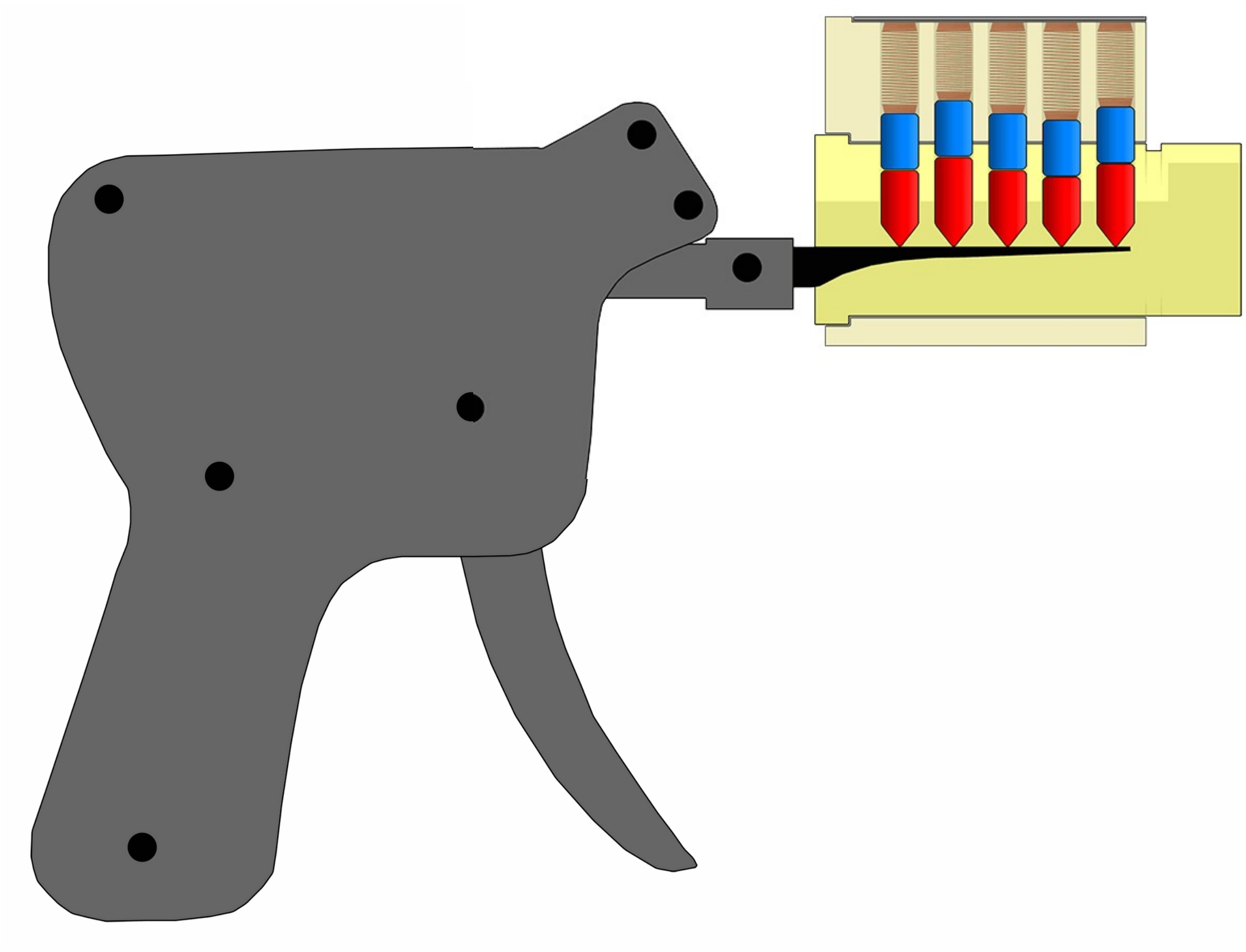
Snapping Guns



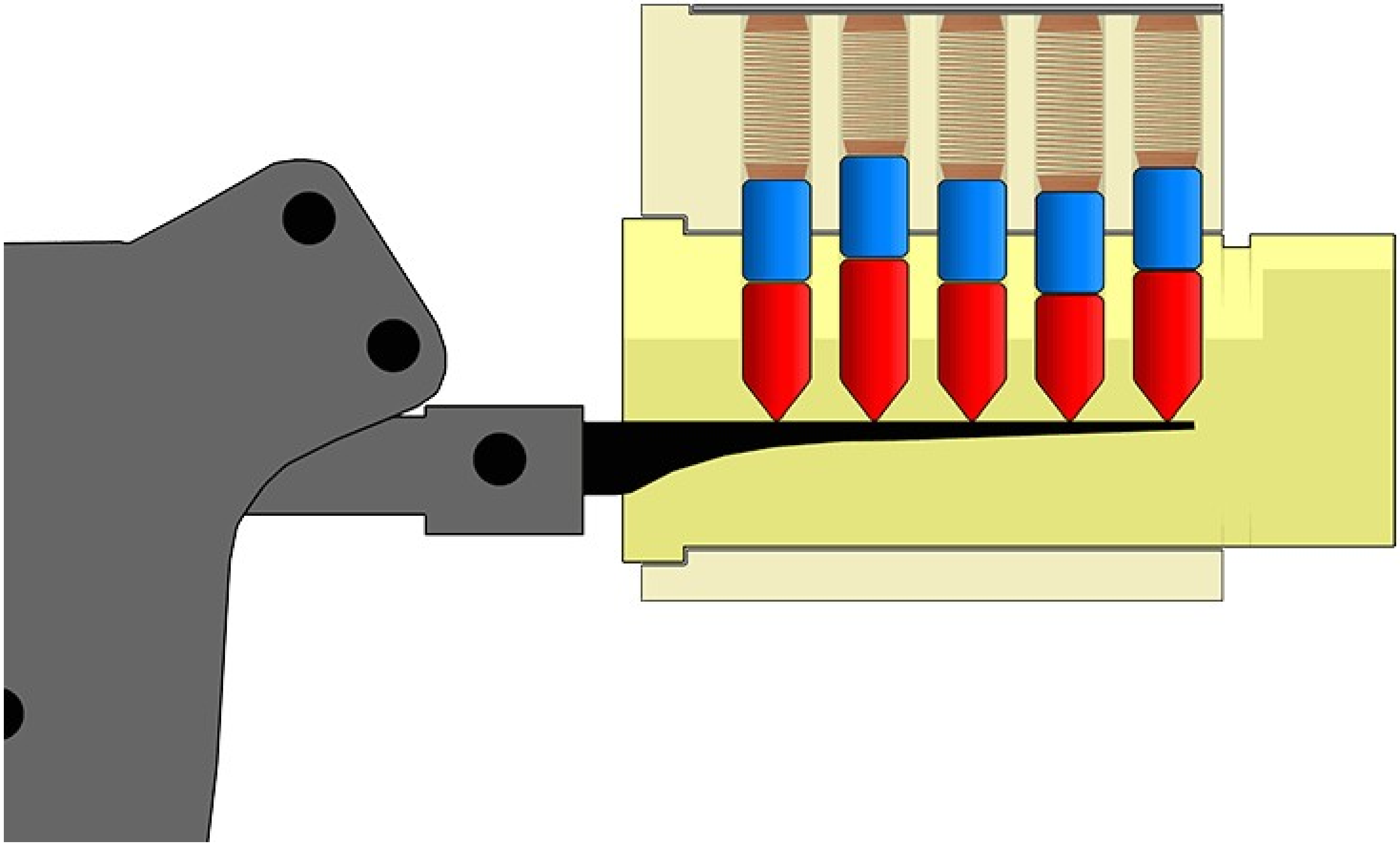
Snapping Guns



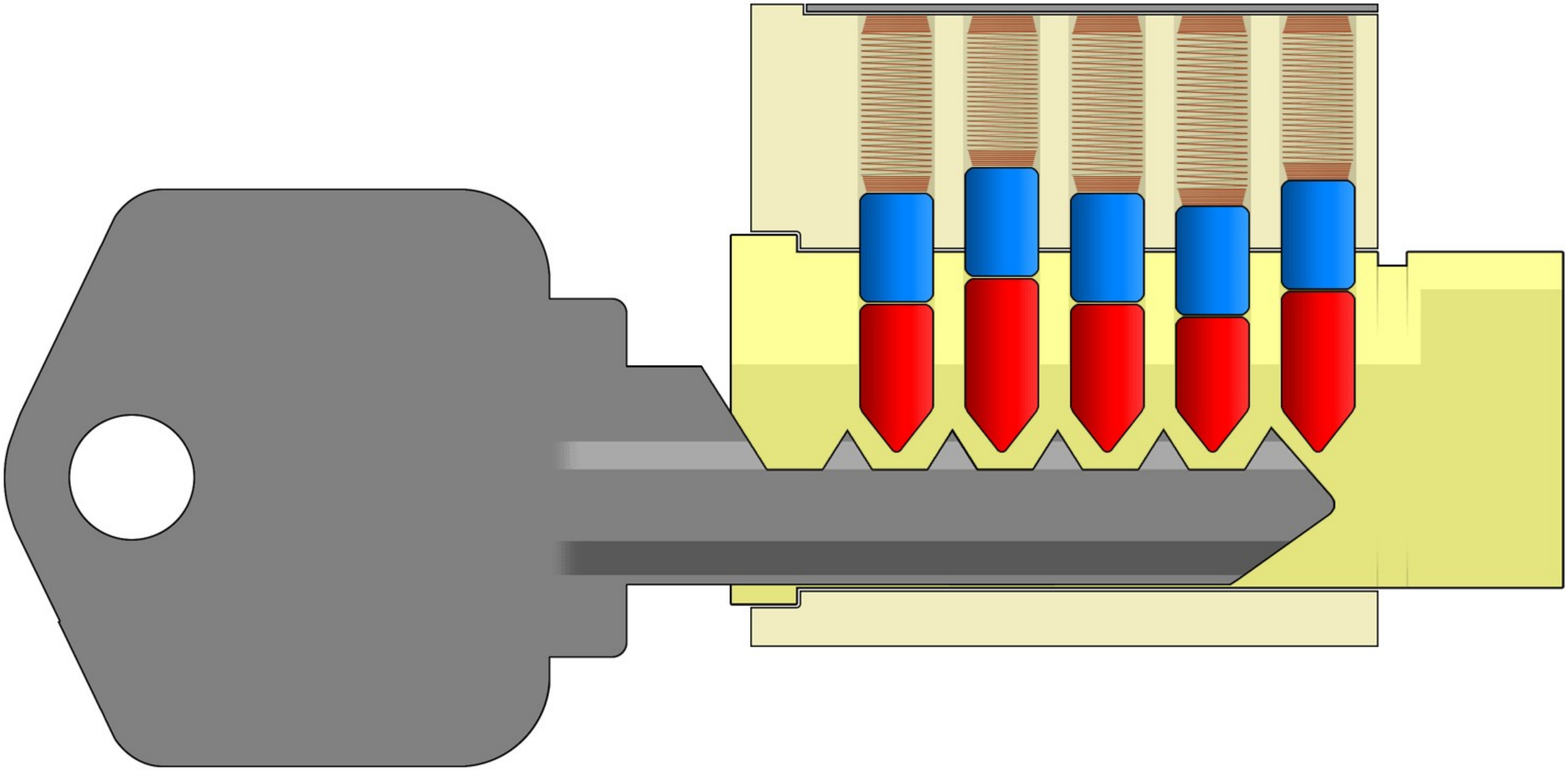
Snapping Guns



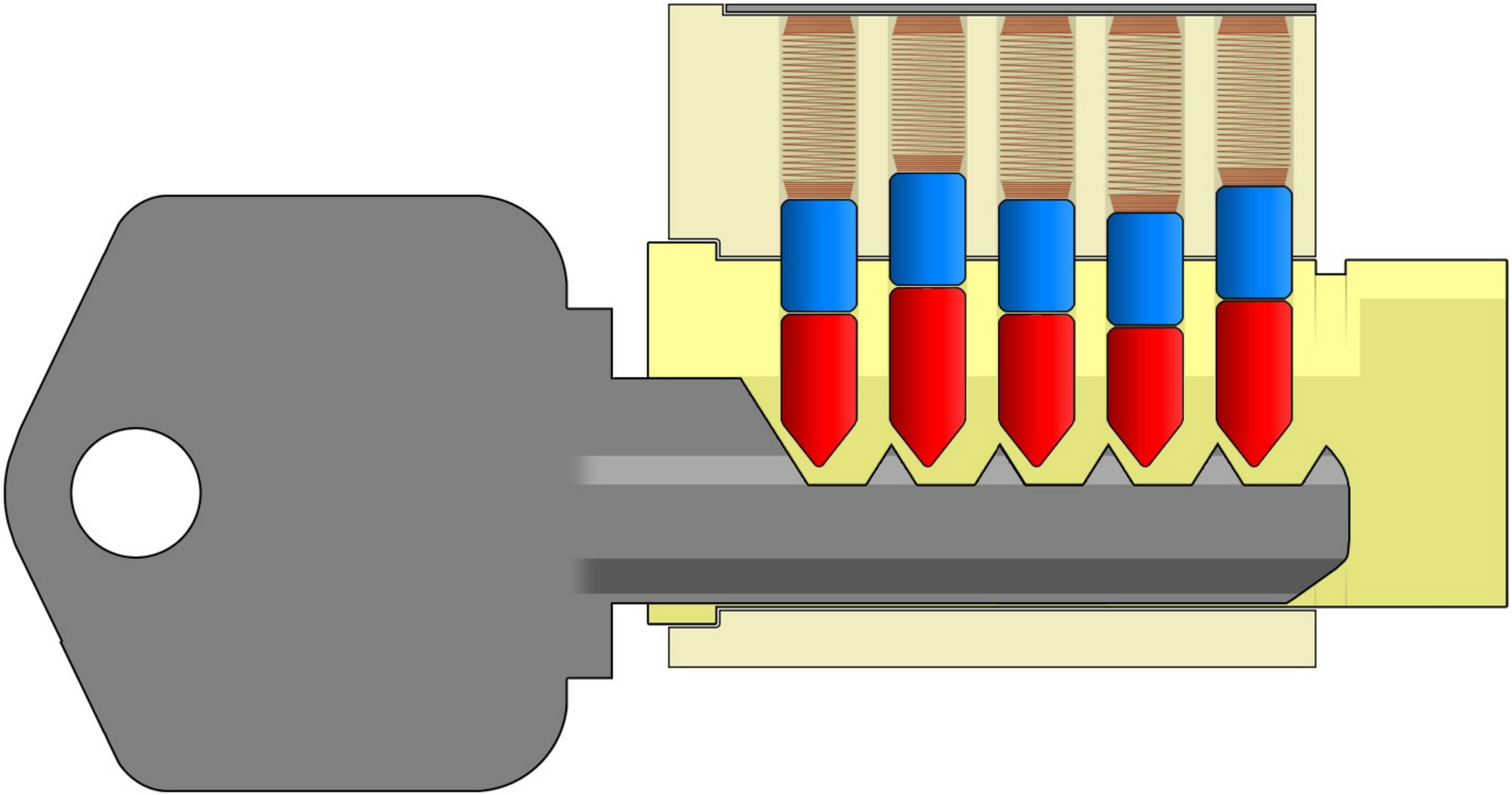
Snapping Guns



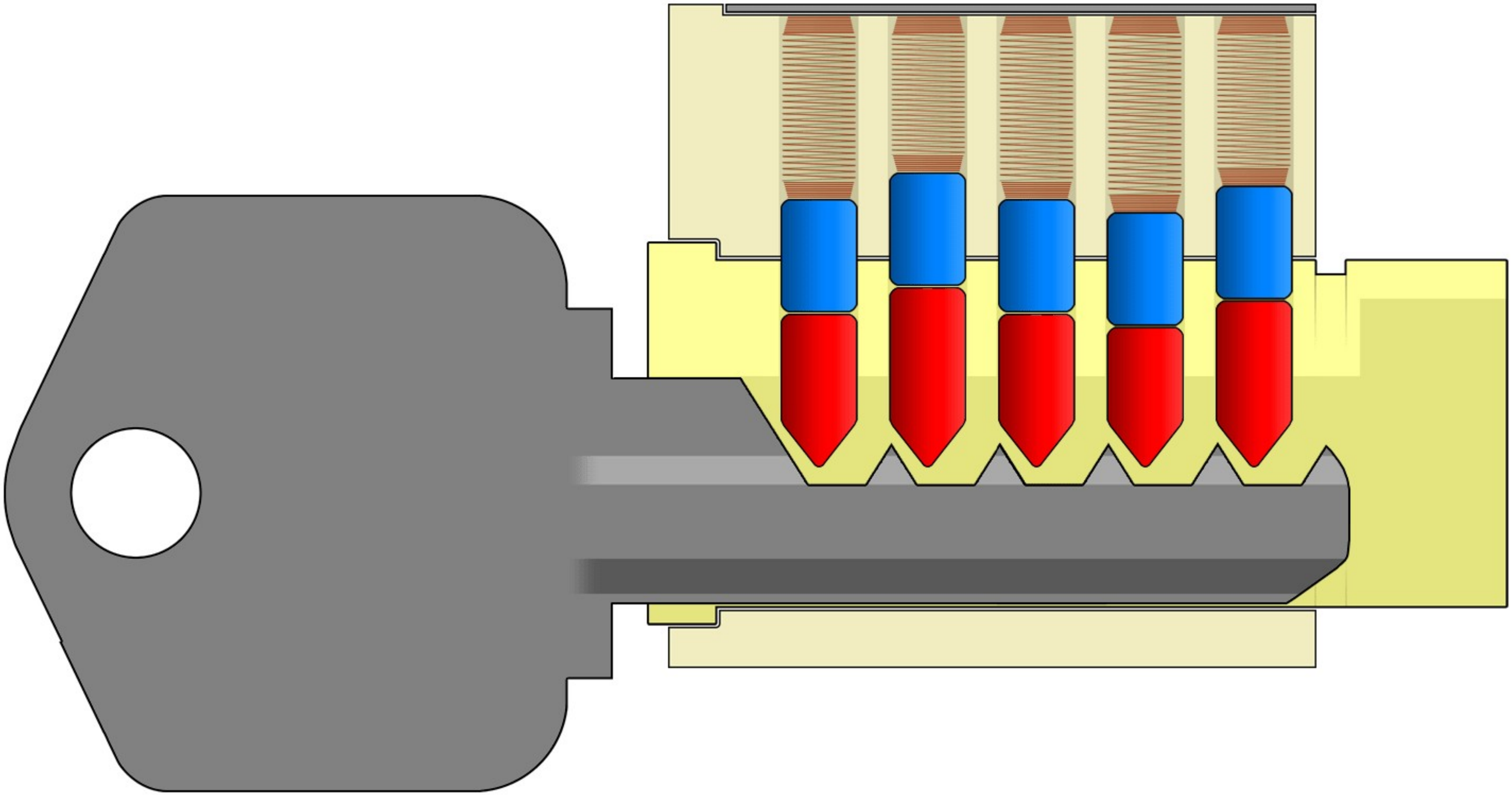
Lock Bumping – Pull Method



Lock Bumping – Push Method



Lock Bumping – Push Method



Lock Bumping



http://toool.nl/bumping.pdf

Lock Bumping

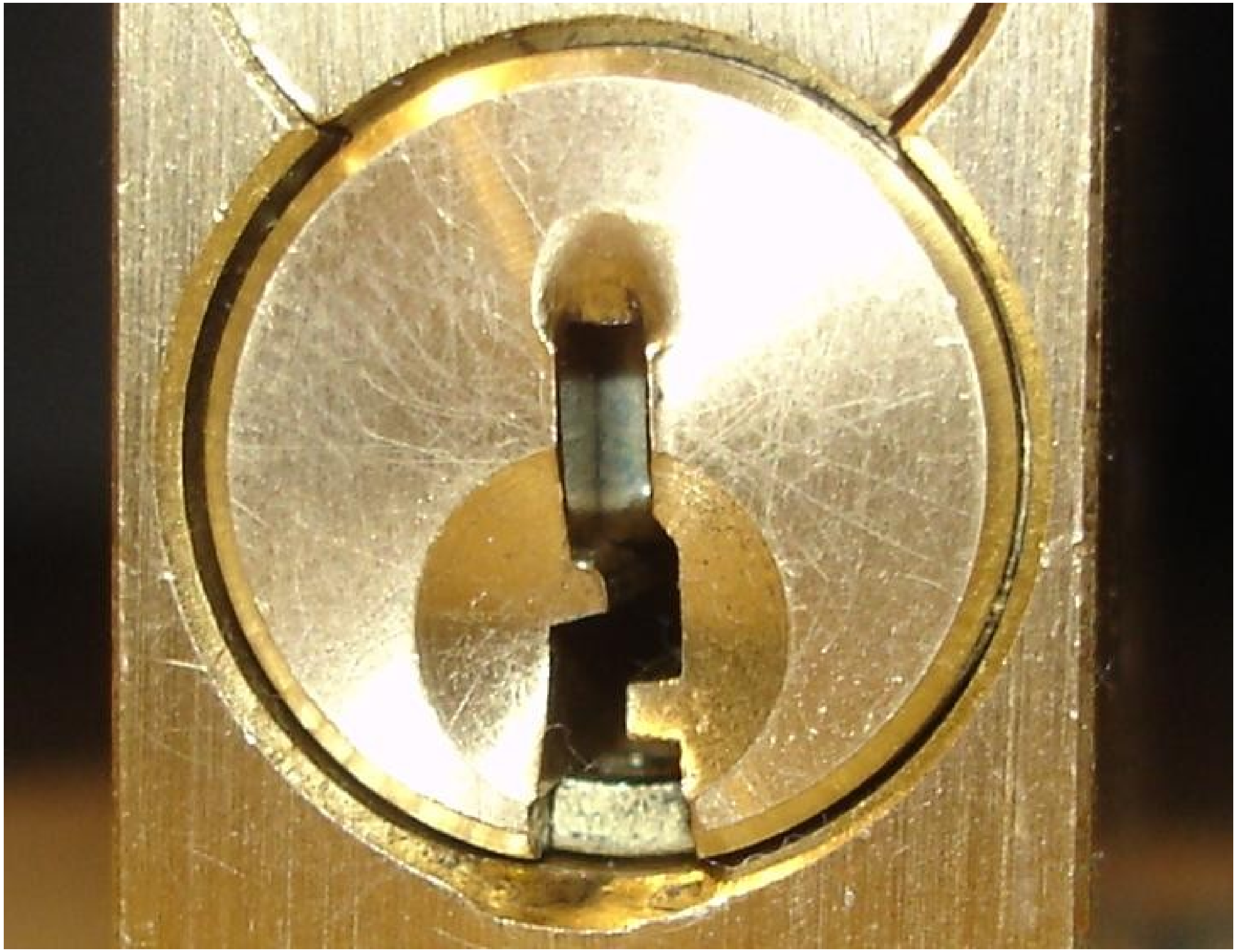
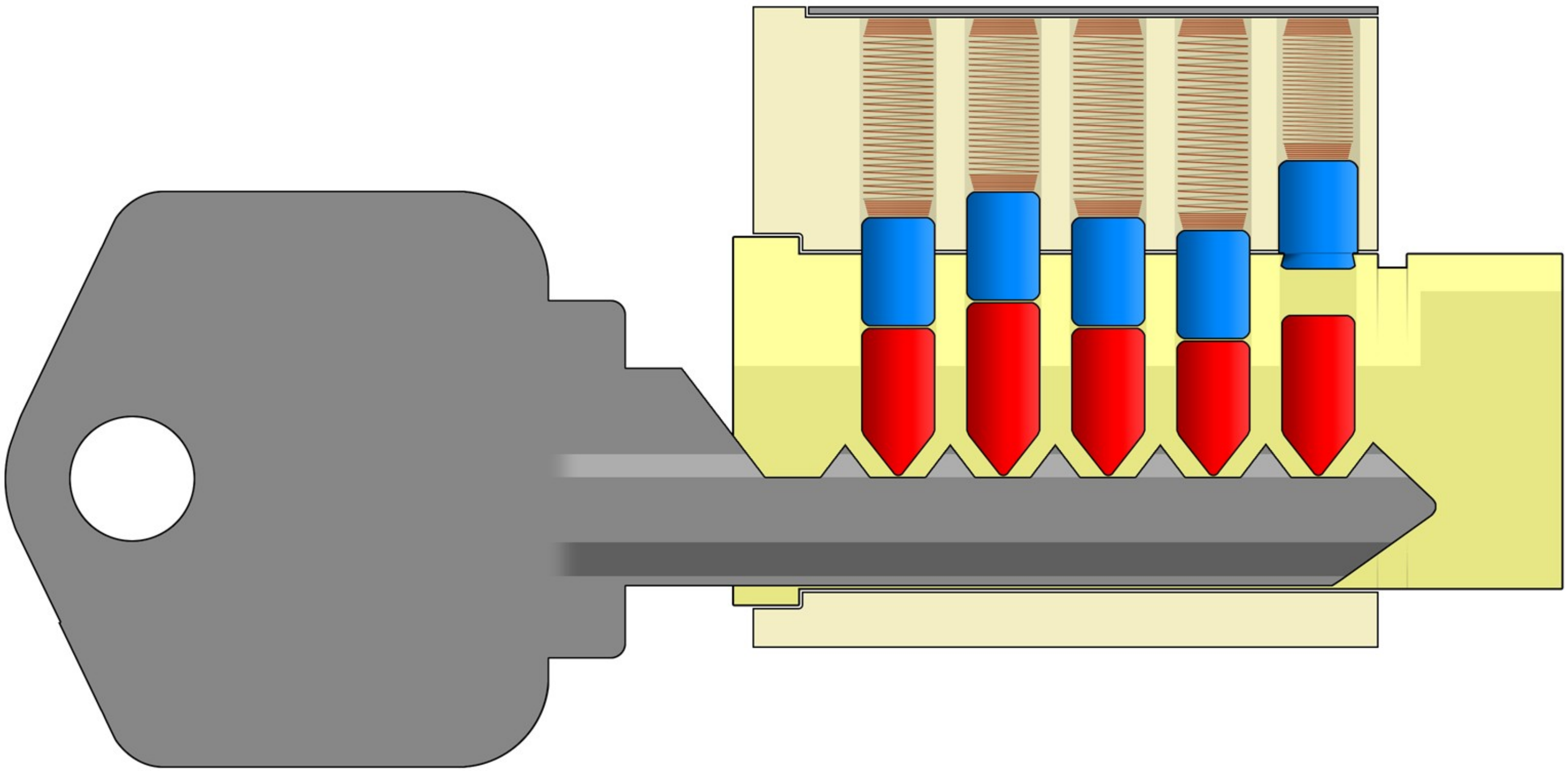
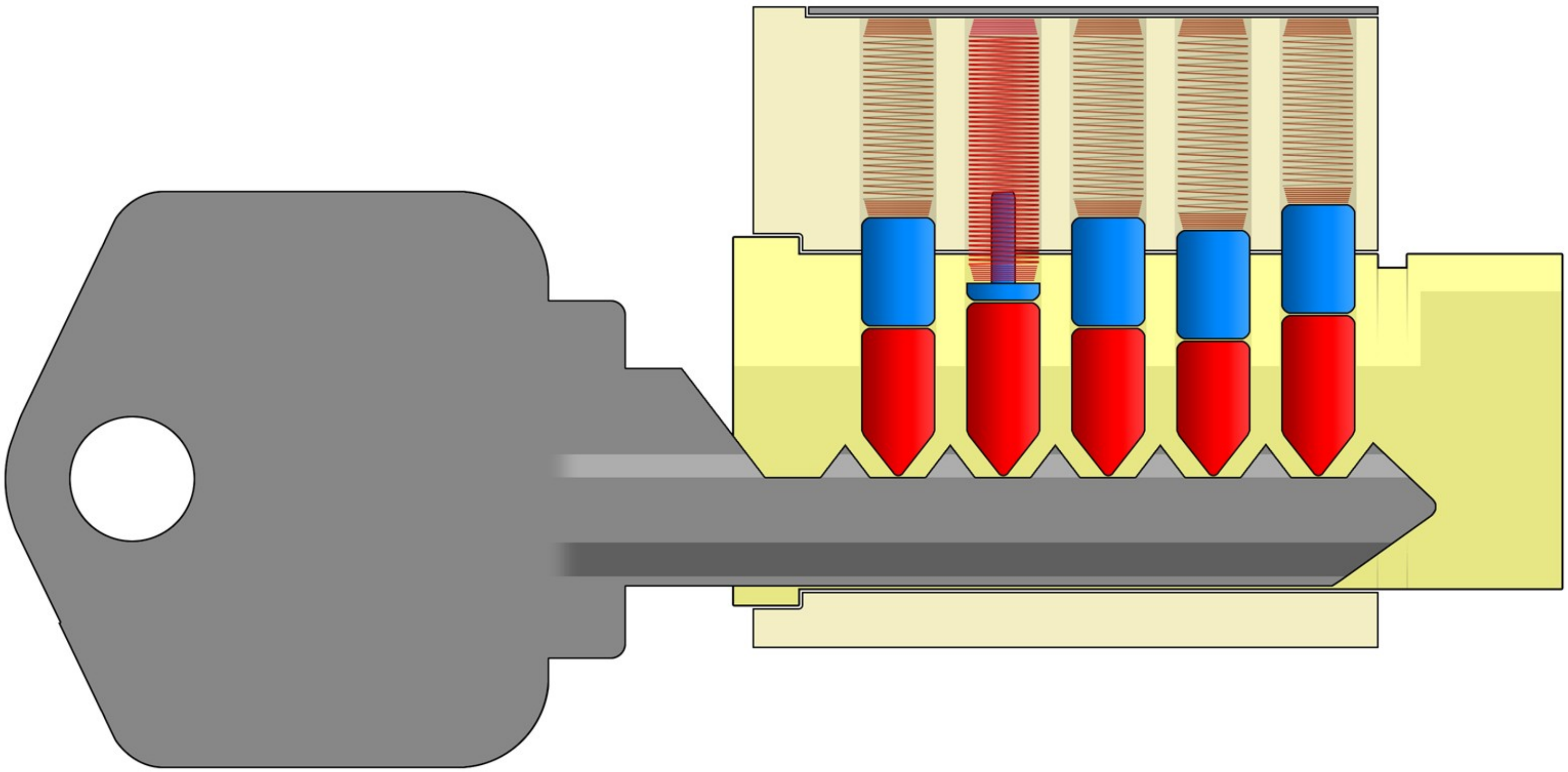


photo courtesy of datagram

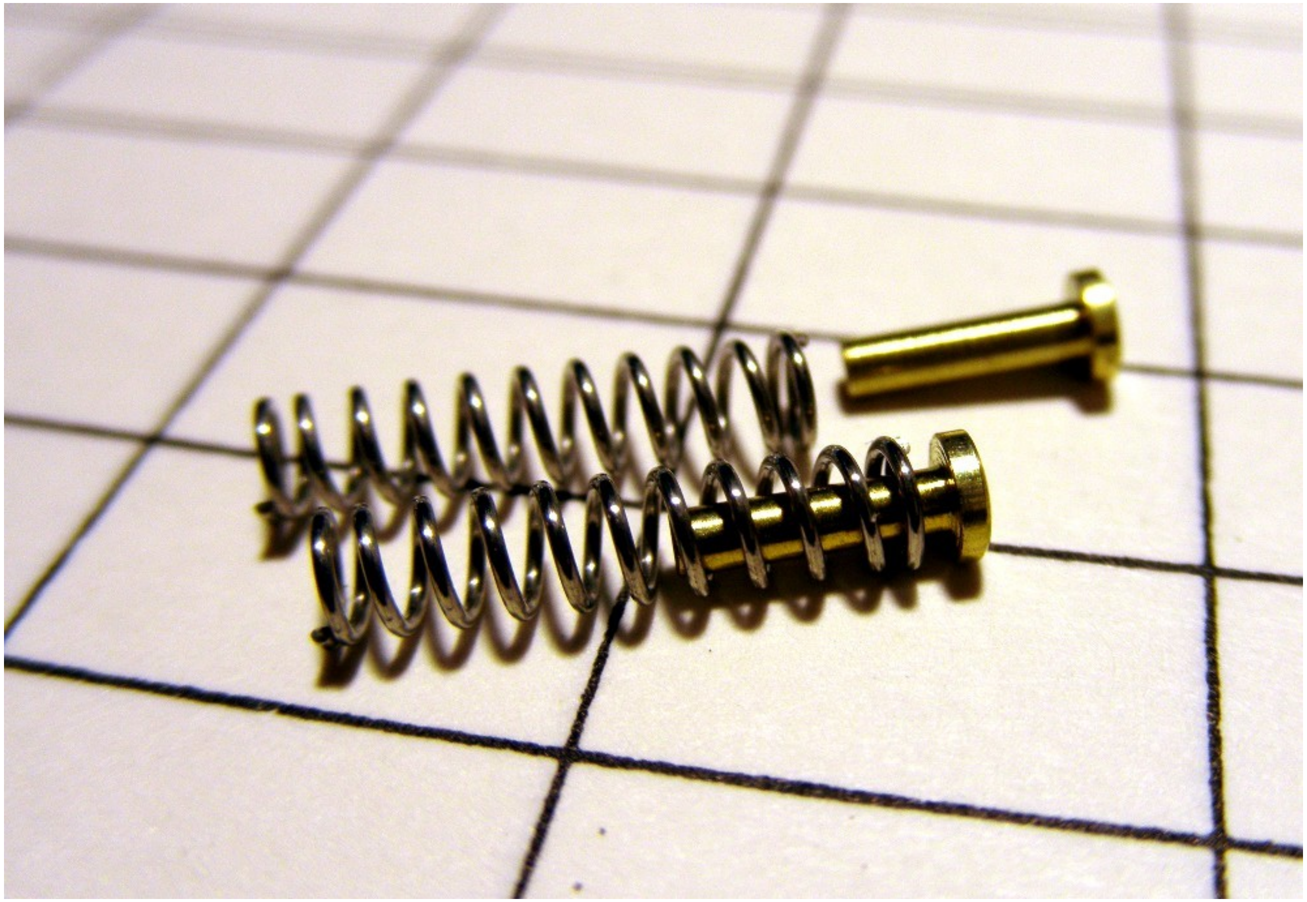
Bumping Countermeasures – Top Gapping



Bumping Countermeasures – Anti-Bump Driver Pin



Bumping Countermeasures – Anti-Bump Driver Pin



Bumping Countermeasures – Anti-
Bum

A Member of the Kaba Group

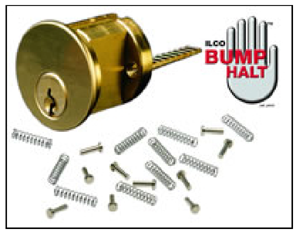
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Home > Products > Cylinders > **Bump Halt**

Bump Halt™ (Bump Resistant Cylinders)



Bump Halt provides a "bump resistant" solution for the Ilco line of Key in knob / Key in Deadbolt, Mortise and Rim Cylinders. This Innovative Patent Pending solution to bumping will resist the transfer of force from the bump key to the pins.



Kits are also available that will enable conversion of a new or existing Ilco Cylinder.

- Effective yet cost efficient
- No special tools or machining required
- Available factory installed or as aconversion kit
- Conversion kits contain 10 pins, 10 springs and instructions (one pin and one spring will resist bumping; add anadditional pin and spring to increase the security.

Bump Halt™ has not been tested on competitive brands of cylinders.

Documentation

Cylinders brochures, pricing information, manuals, parts lists, etc. can be found on the literature grid section.

Click here to visit the literature section.

Read More

Contact

Kaba Ilco Corp.
400 Jeffreys Road
Rocky Mount, NC 27804
1-800-334-1381

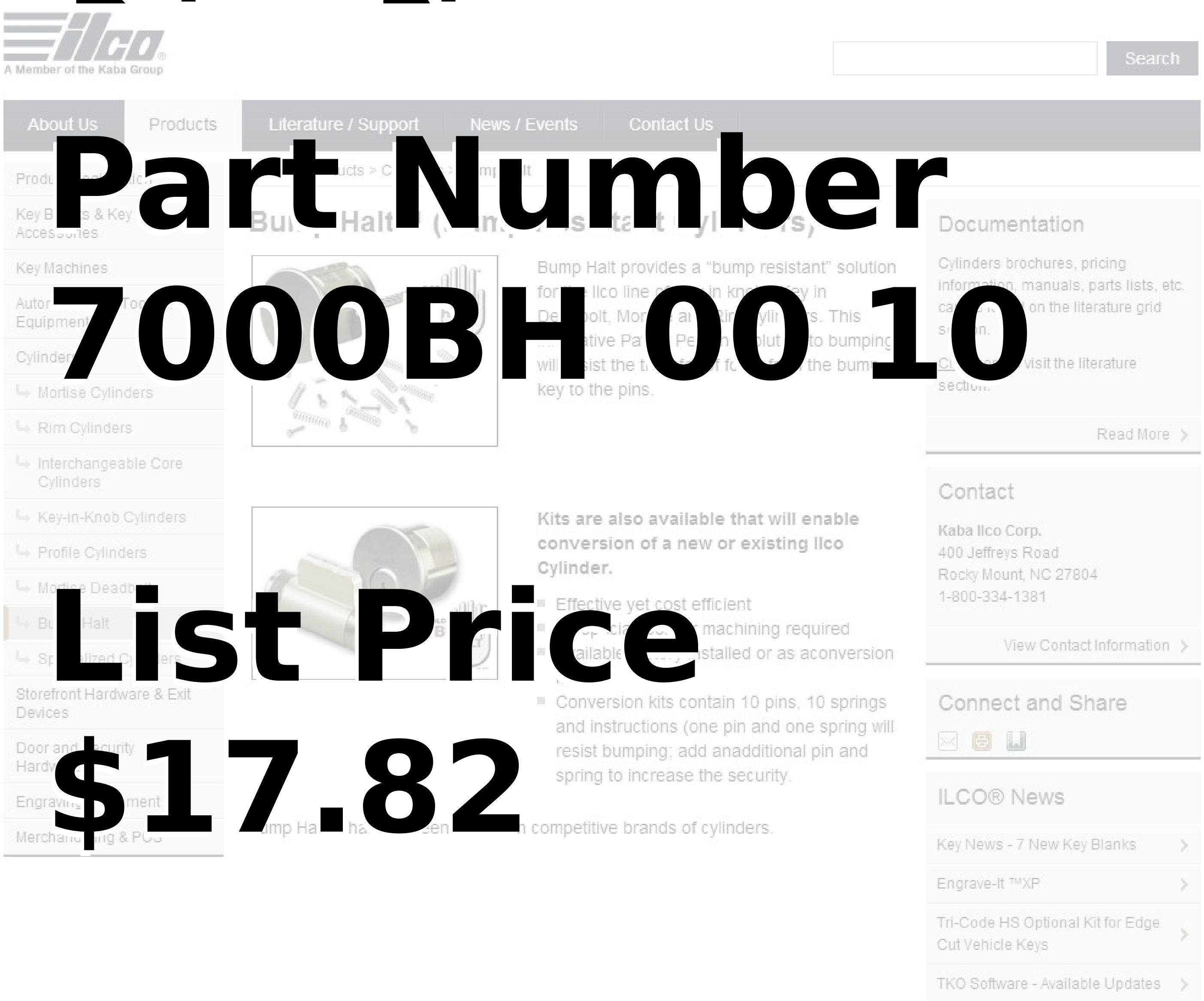
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Bumping Countermeasures – Anti-Bum



Part Number
7000BH 00 10

List Price
$17.82

Dealer Price

Bumping Countermeasures – Anti-Bump Driver Pin

Locksmiths



Locksmiths



幸運鎖
GOOD LOCK
319
MODERN DECOR
幸運
Good Locksmith
212-431-1287
317

Locksmiths



Locksmiths



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REPAIR SERVICE
KEYS MADE
·BONDED·
LIC. Nº 7-130657
MOBILE SERVICE
Phone 931-8356

Locksmiths

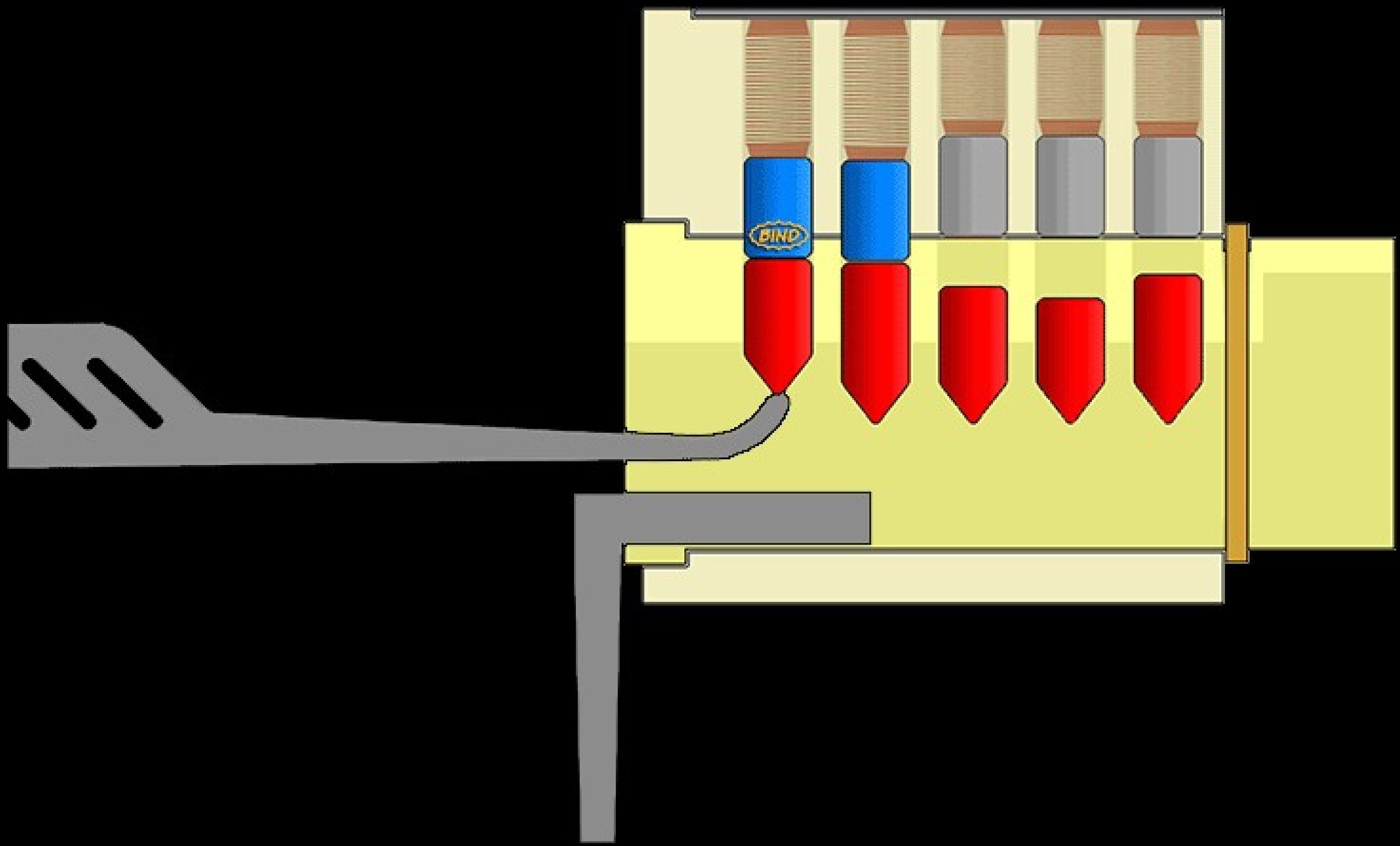
Locksmiths

1. **ALOA logo / ALOA number**
2. **Name Discrepancies**
3. **Estimates & Itemized Invoice**

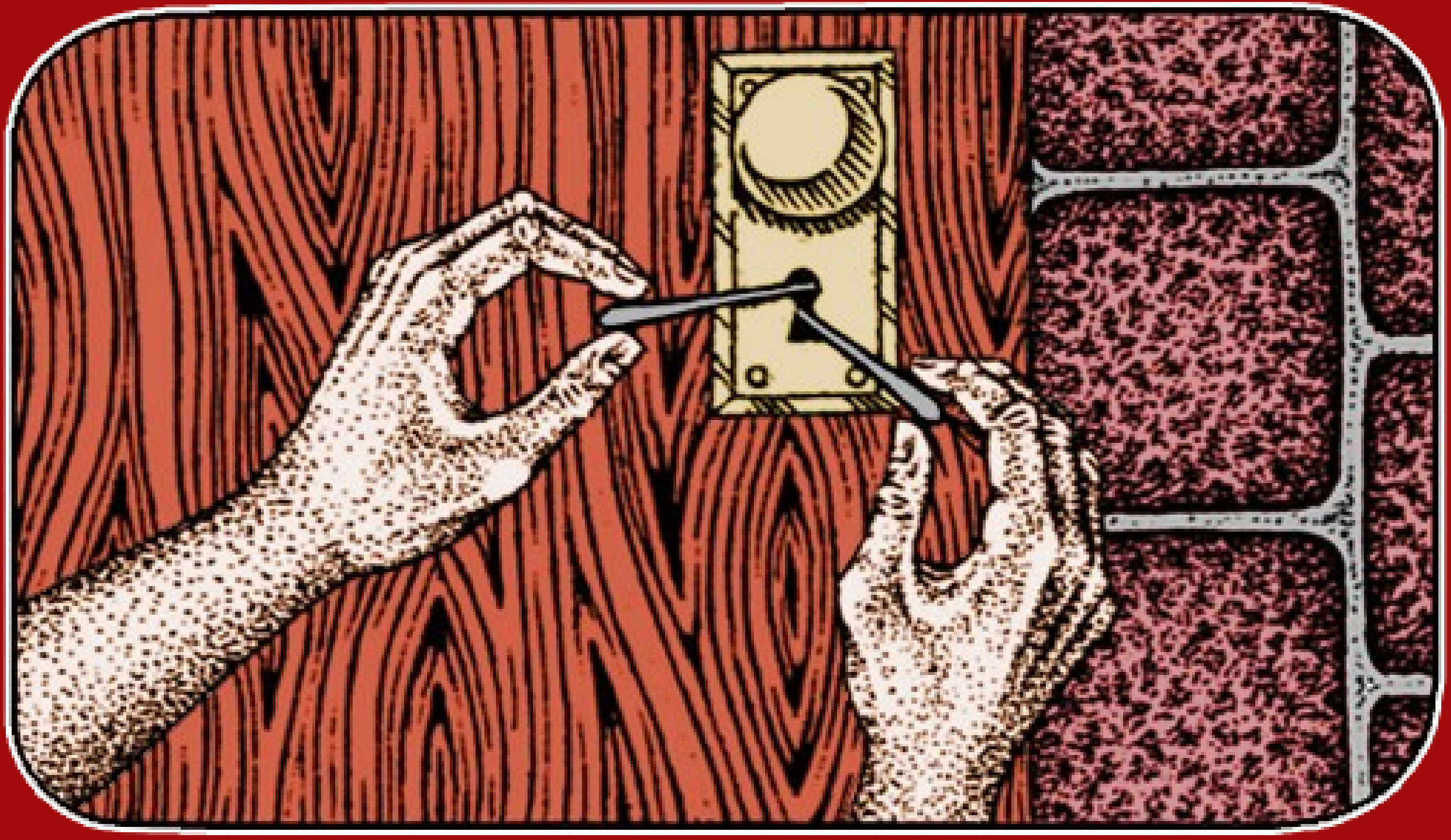
Locksmiths



Questions?



Impressioning



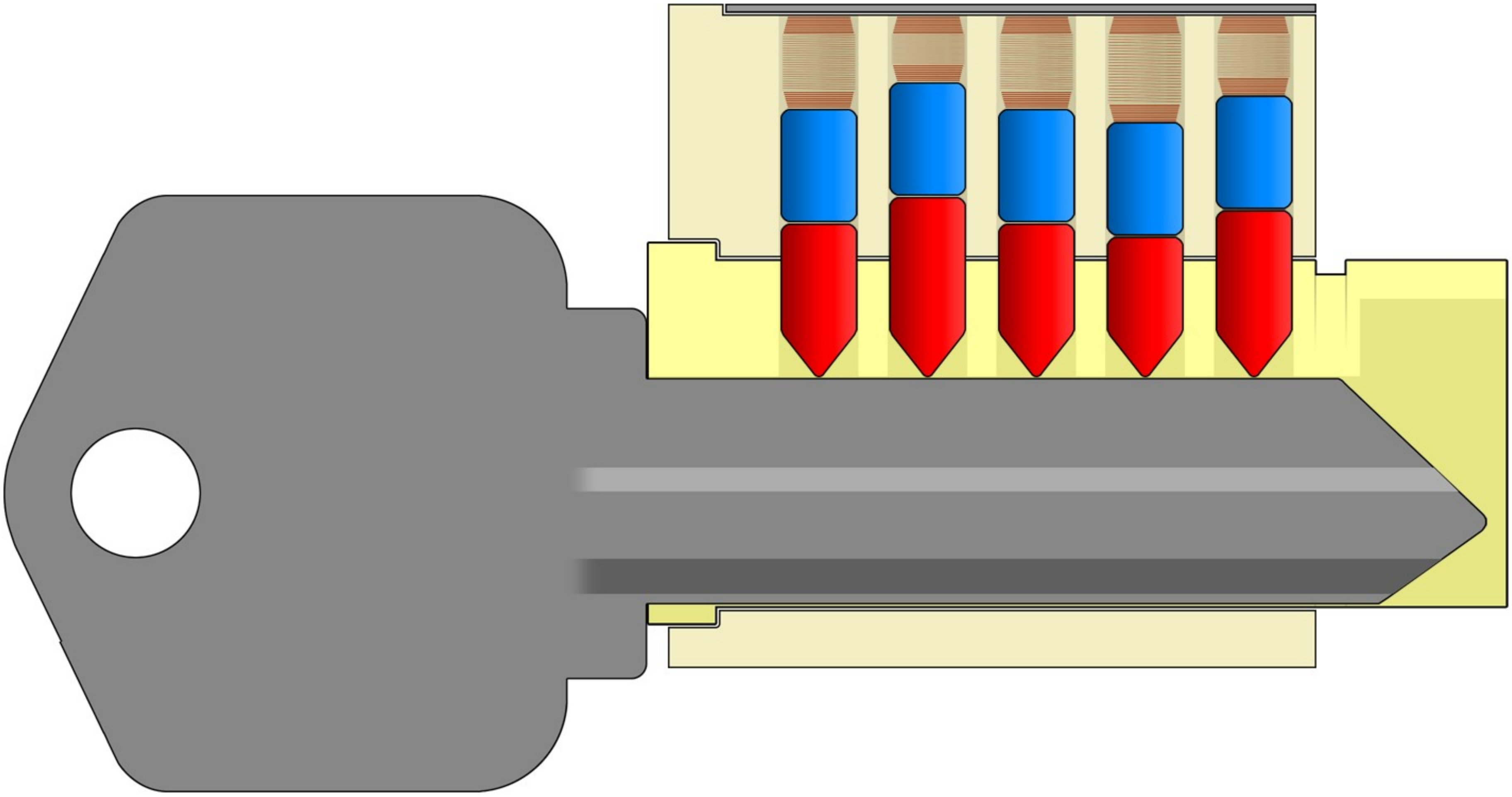
Why Impressioning?



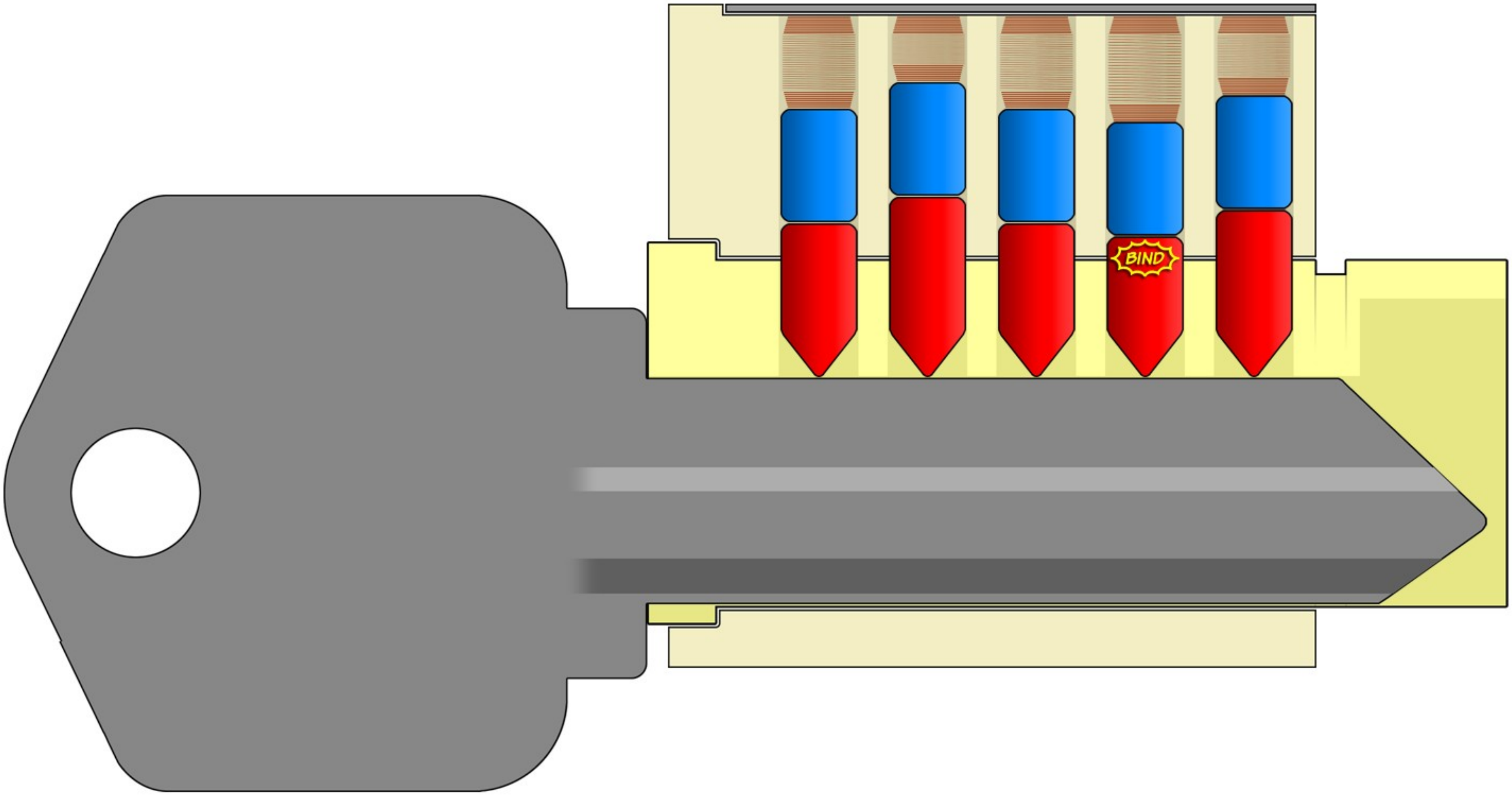
Why Impressioning?



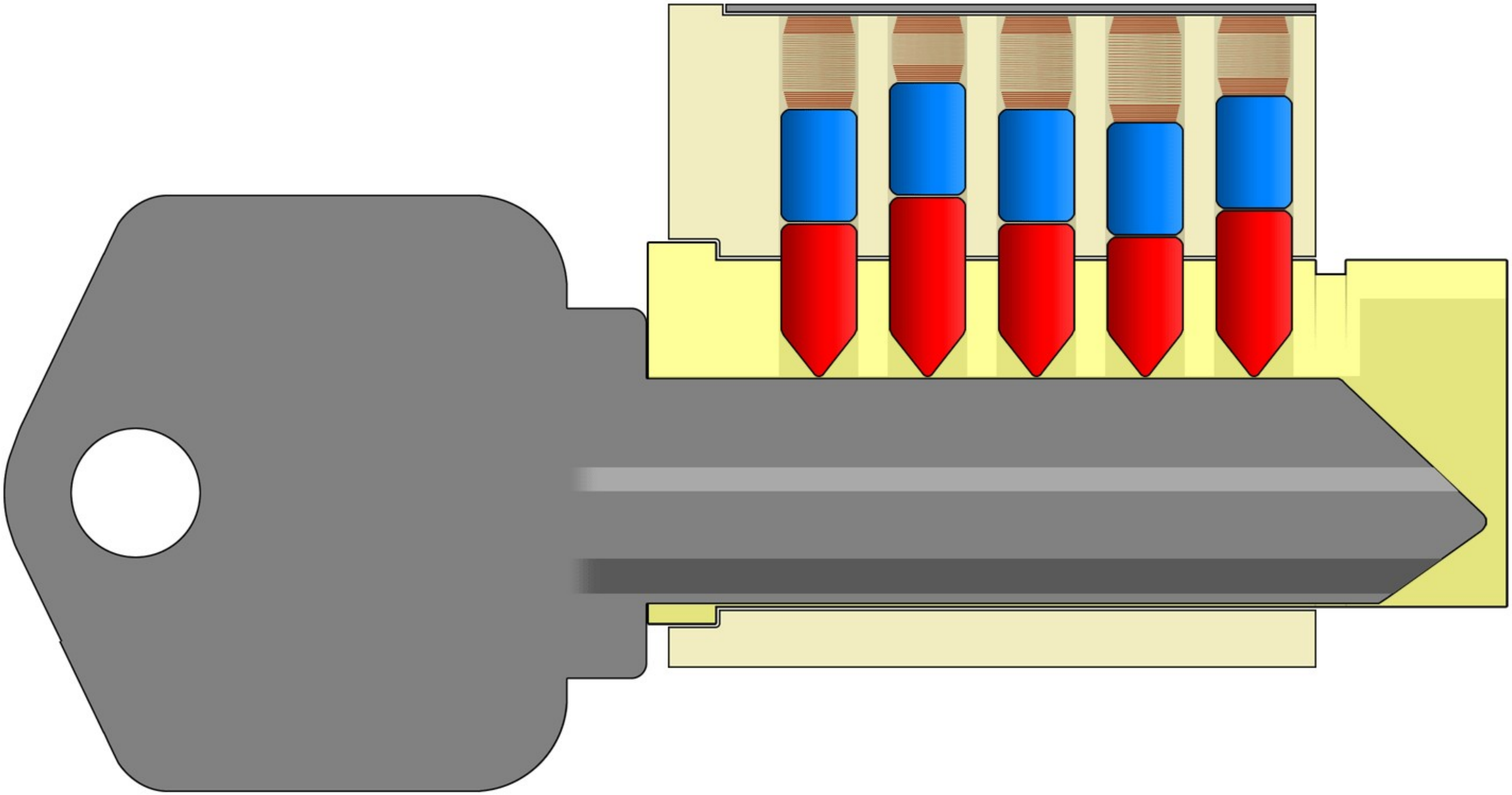
Impressioning – Blank Key to Raise all Stacks



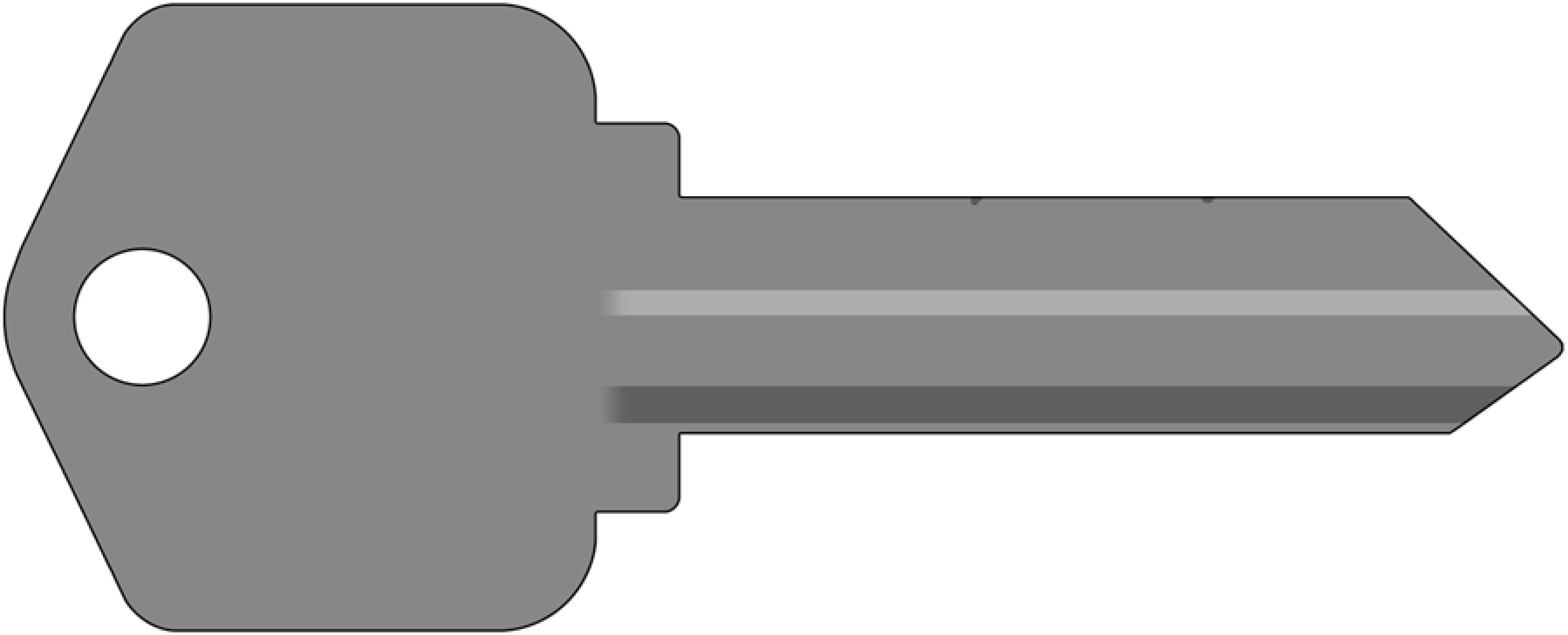
Impressioning – Turn Hard to Bind a Key Pin



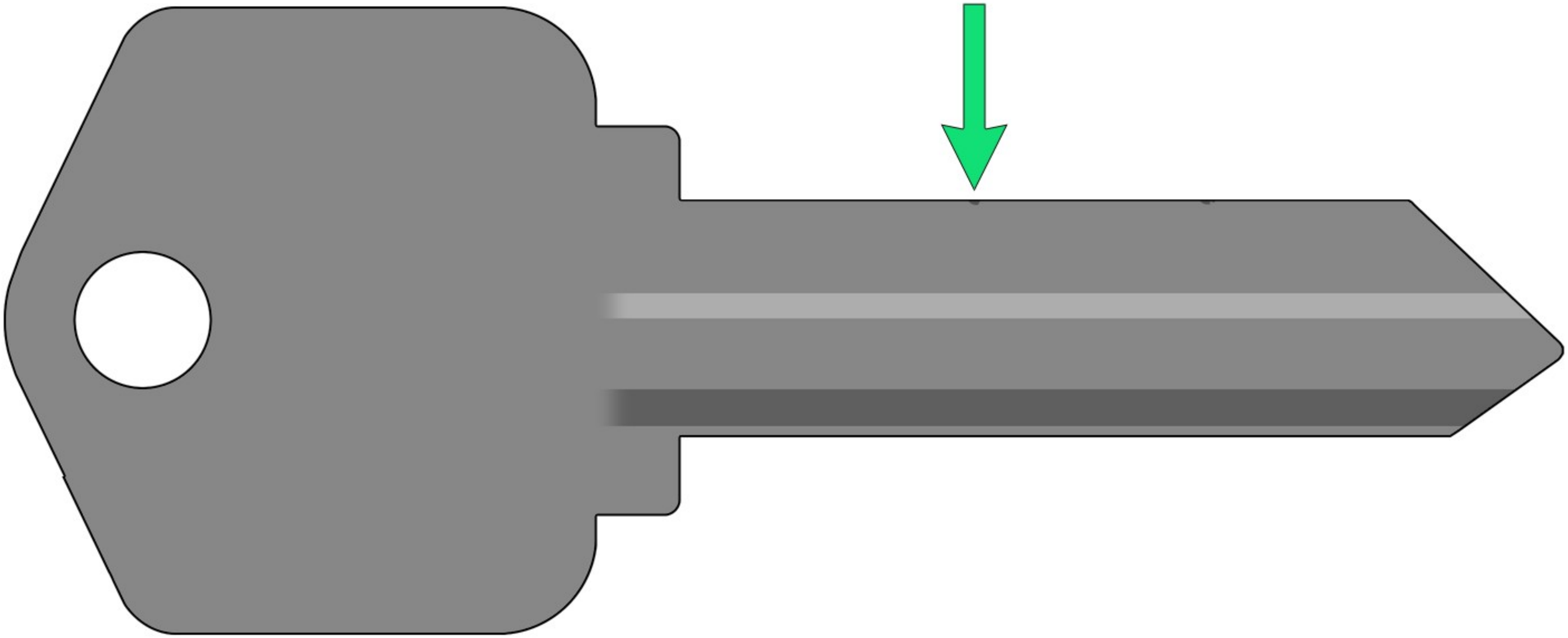
Impressioning – Binding and Wiggling Causes Rubbing



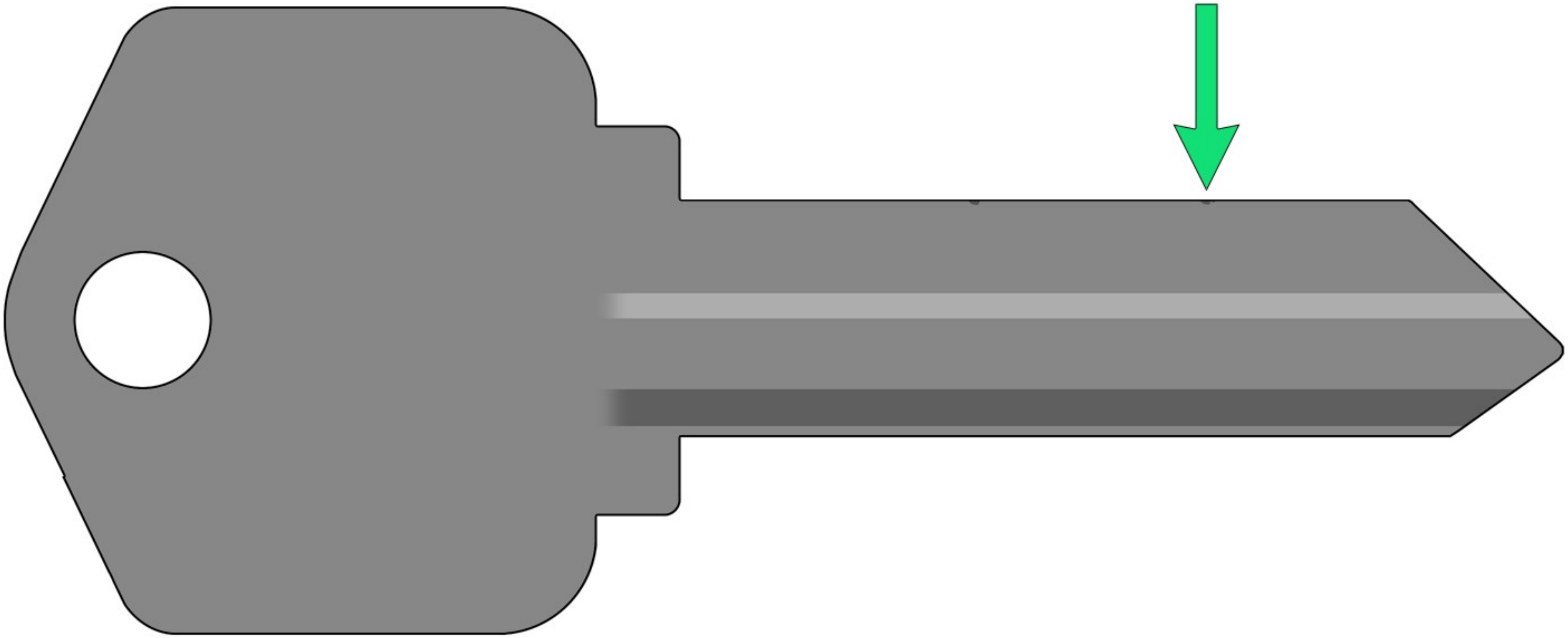
Impressioning – Observe the Rub Marks



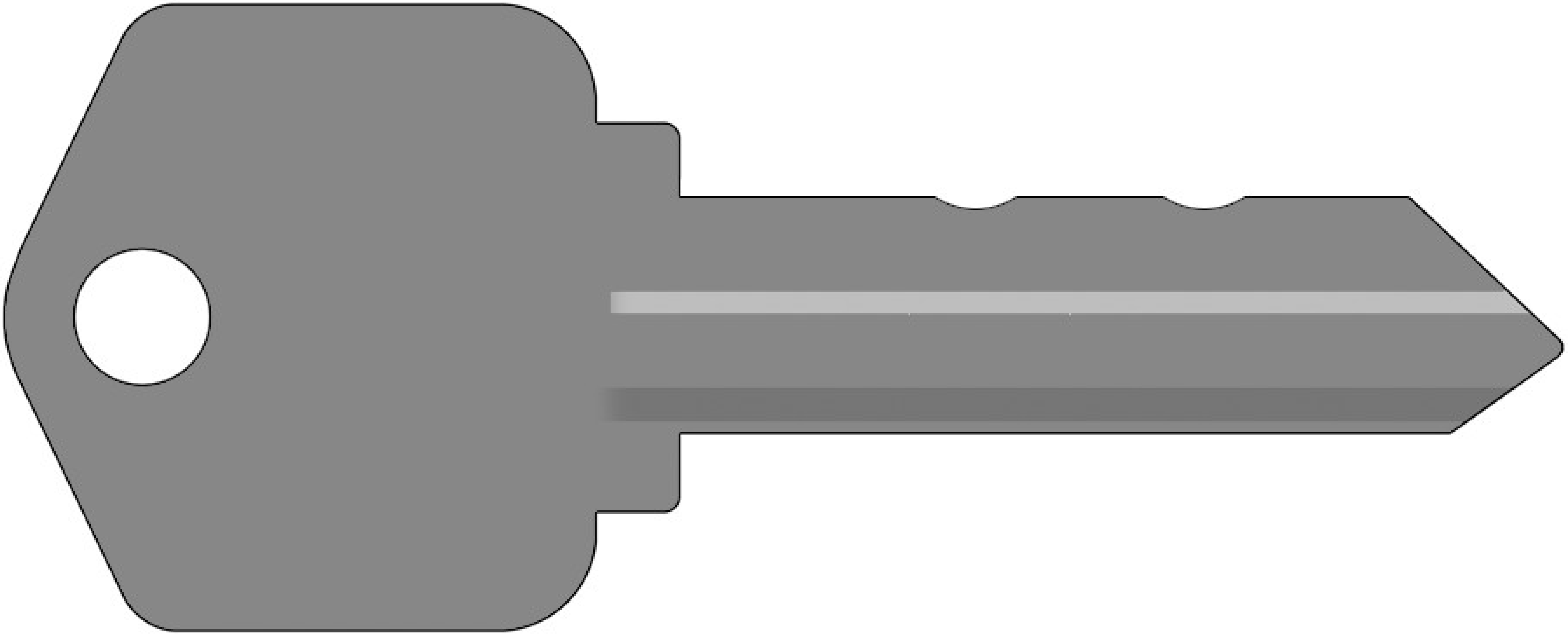
Impressioning – Observe the Rub Marks



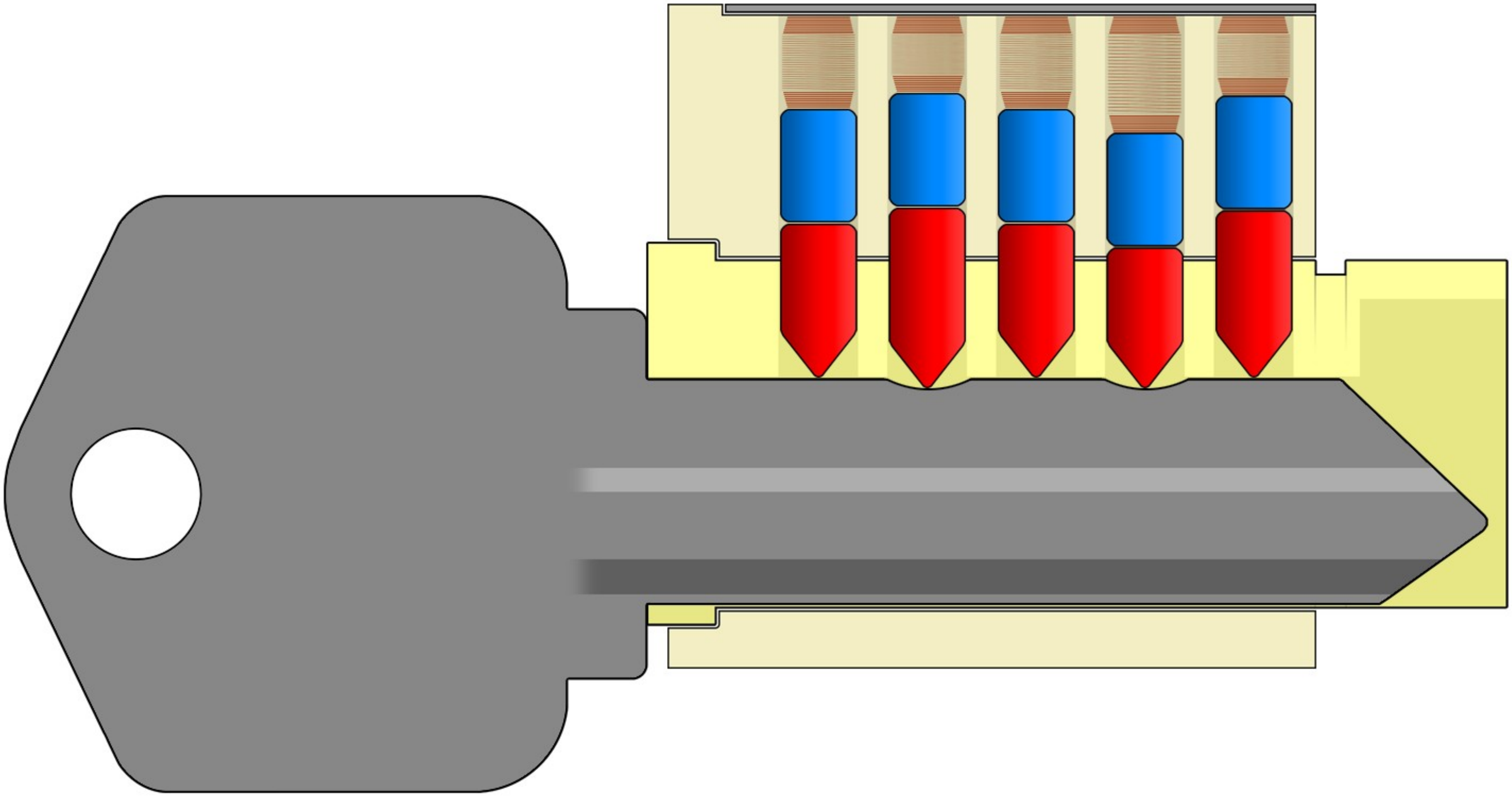
Impressioning – Observe the Rub Marks



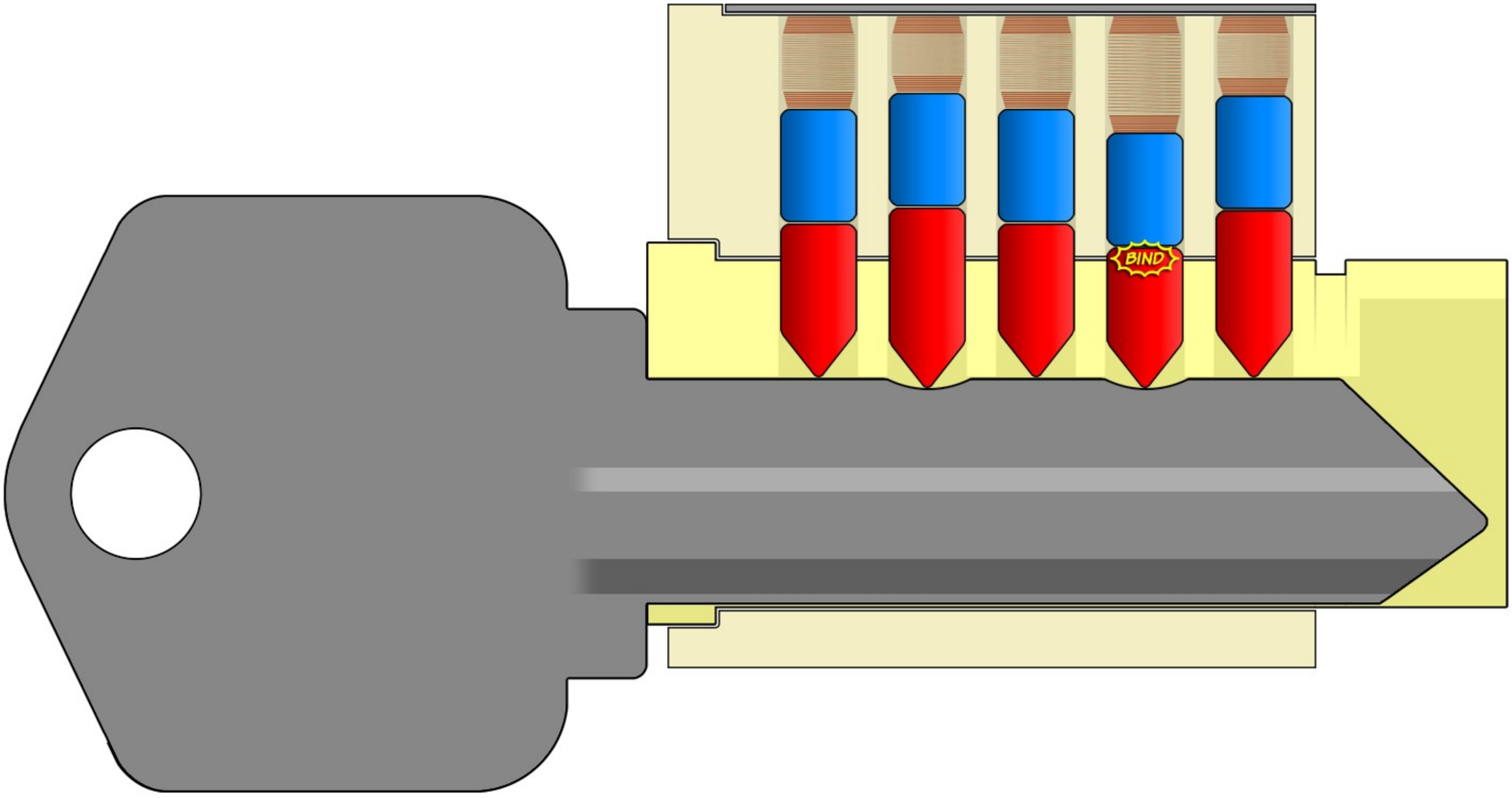
Impressioning – File Down at the Rub Marks



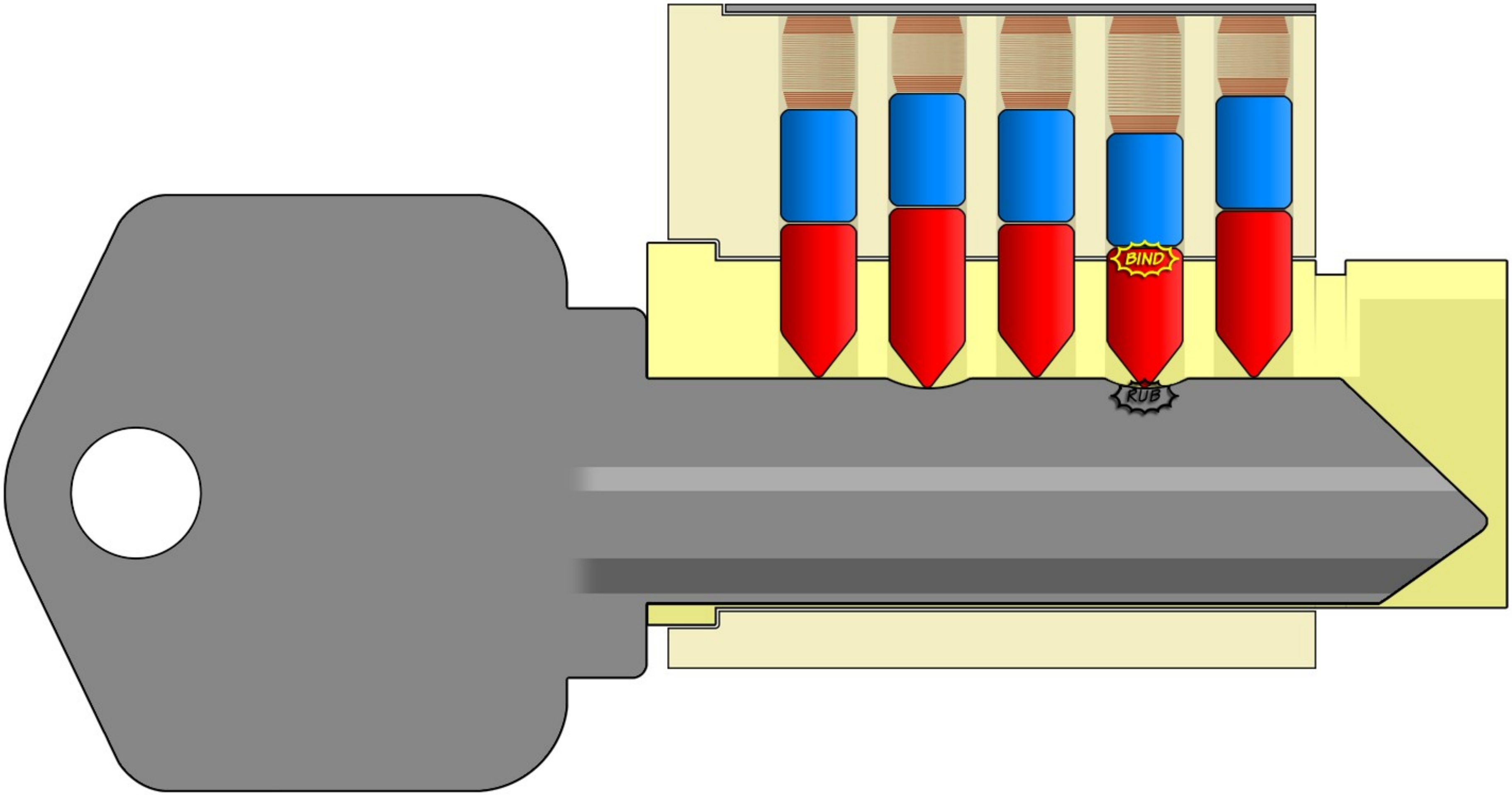
Impressioning – Repeat the Process



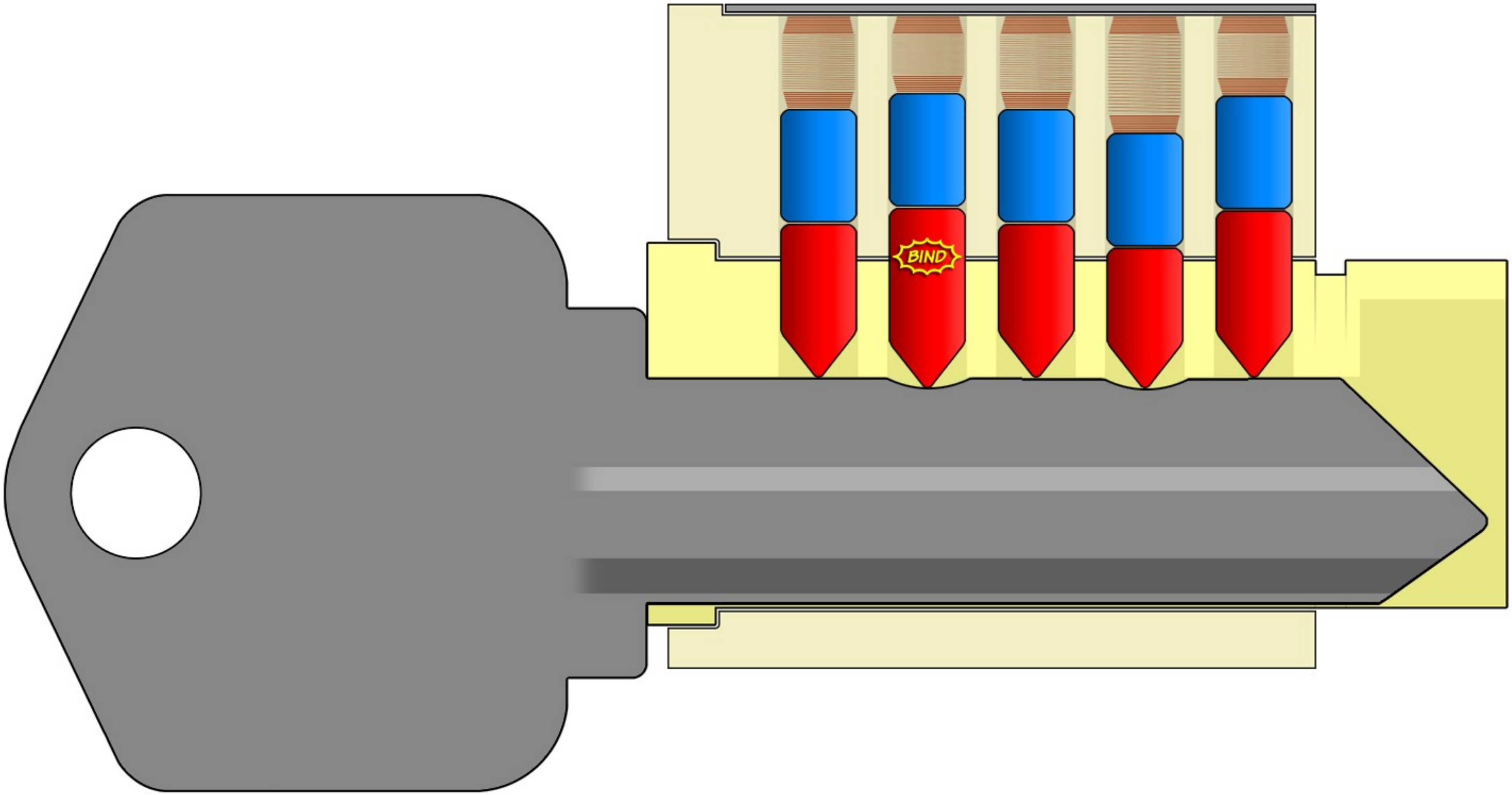
Impressioning – Stack 4 is still Binding



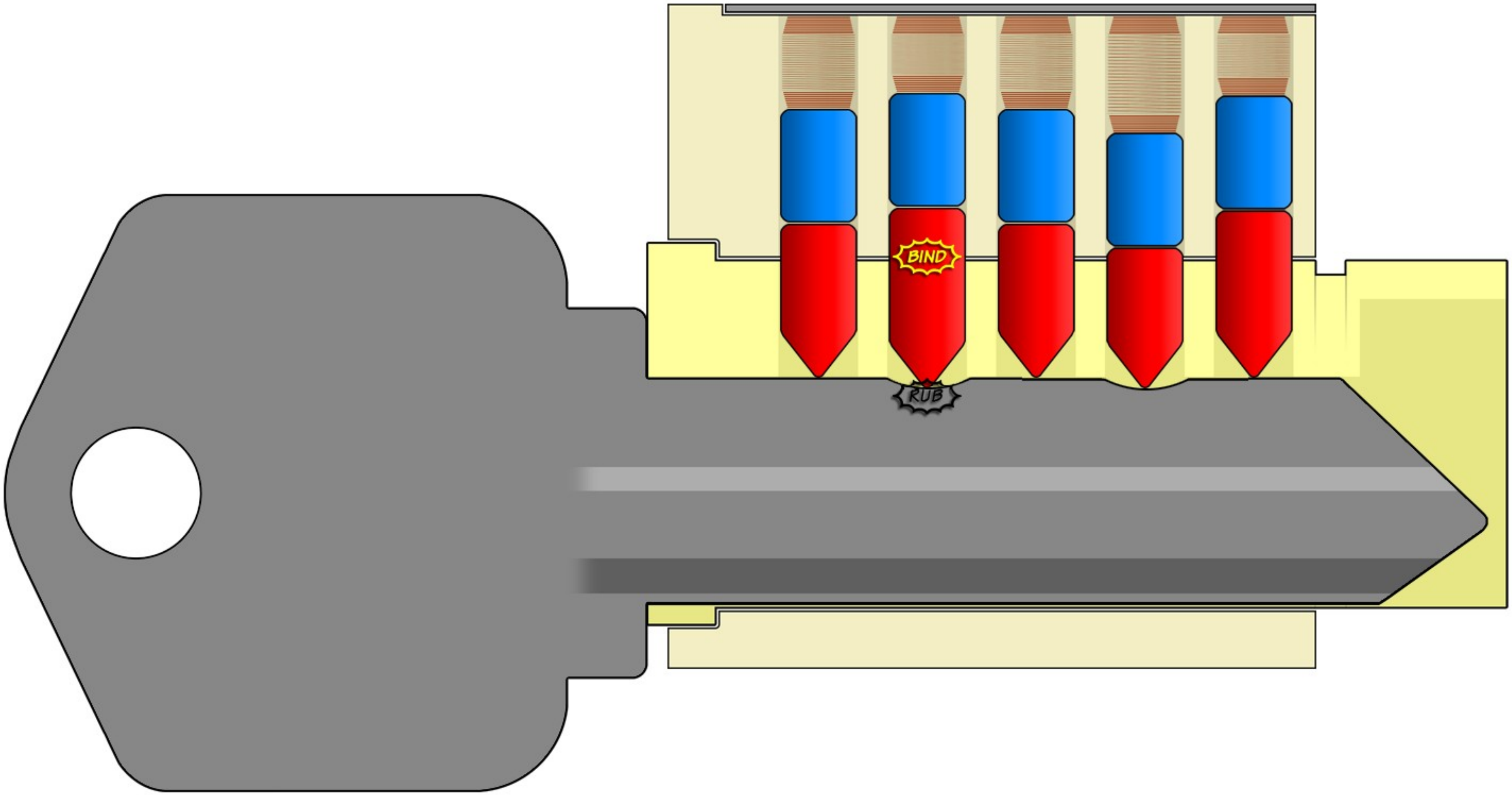
Impressioning – Stack 4 is still Rubbing



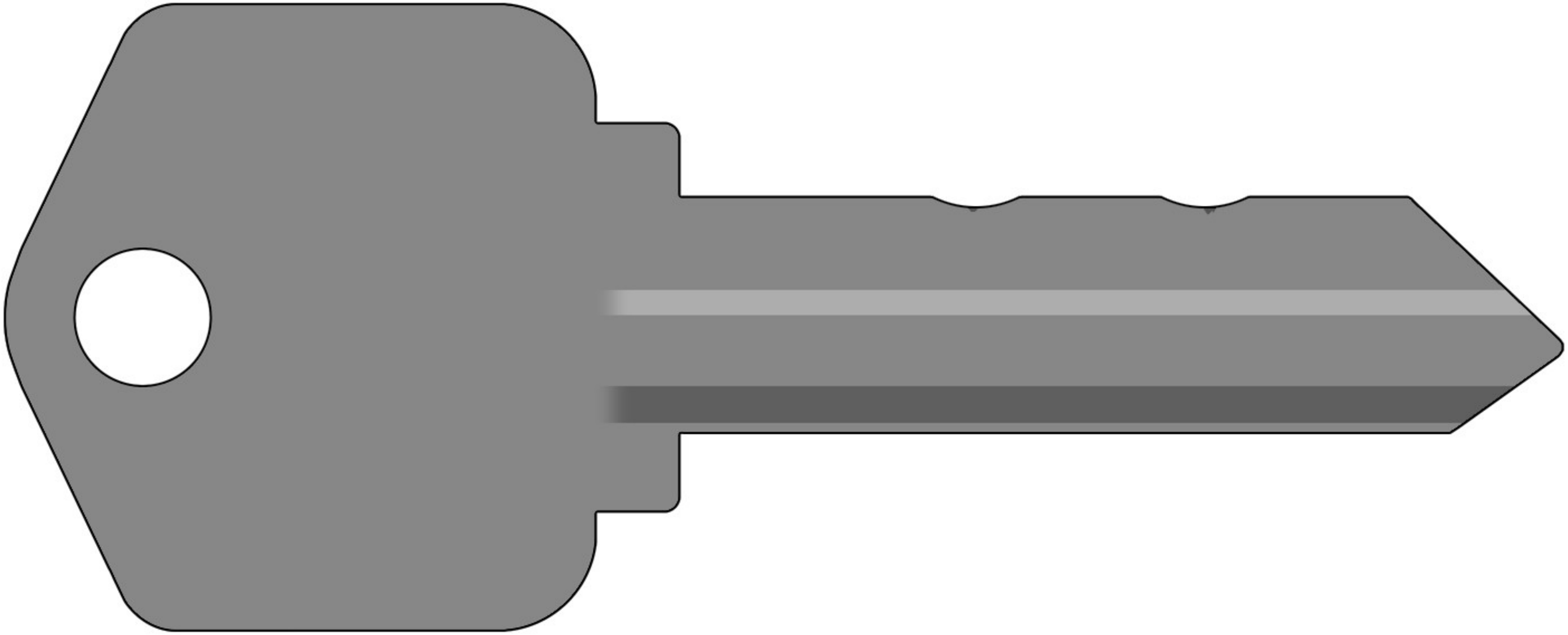
Impressioning – Stack 2 is still Binding



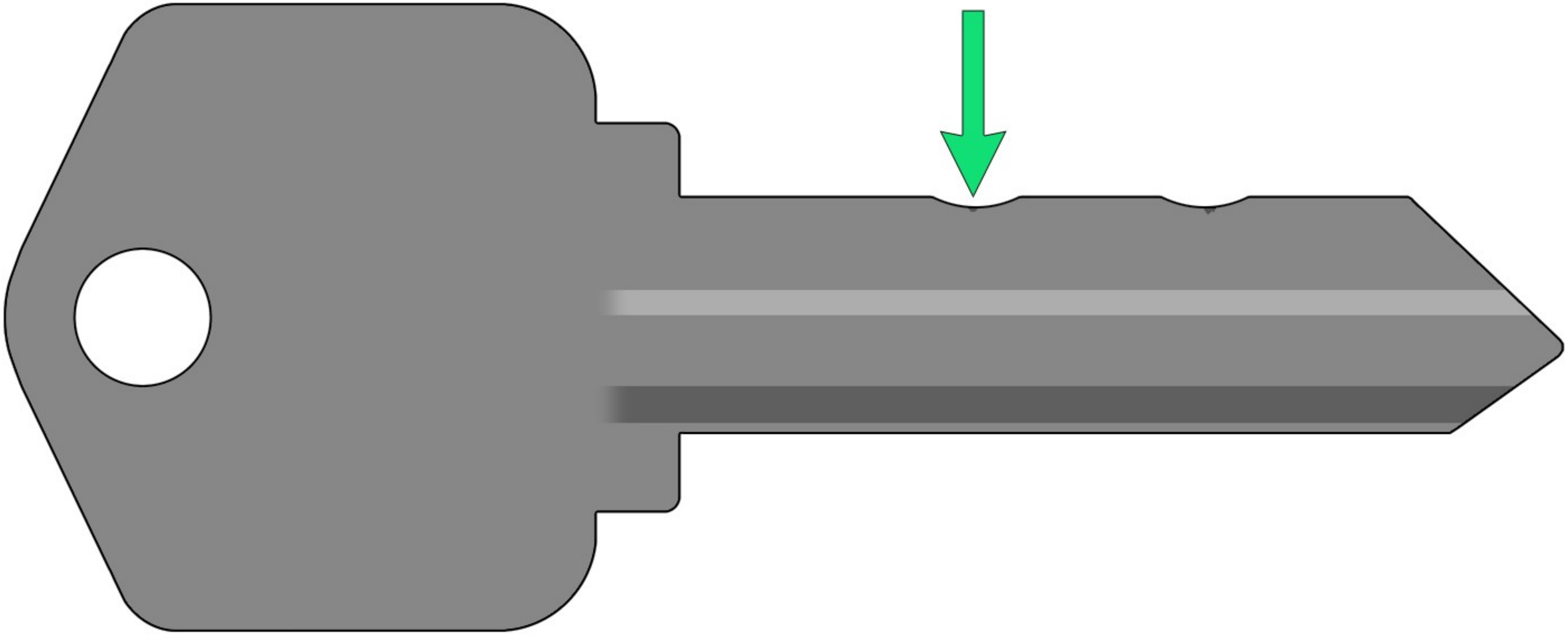
Impressioning – Stack 2 is still Rubbing



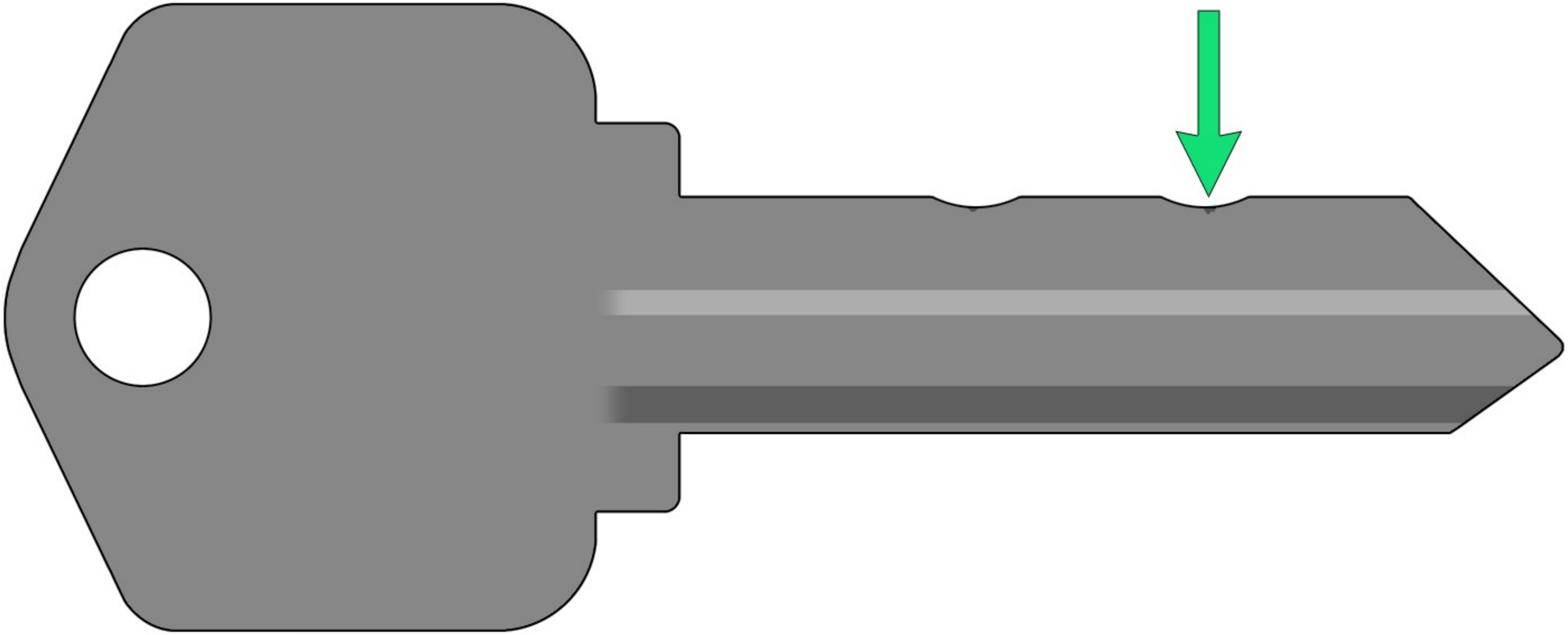
Impressioning – Continued Rub Marks



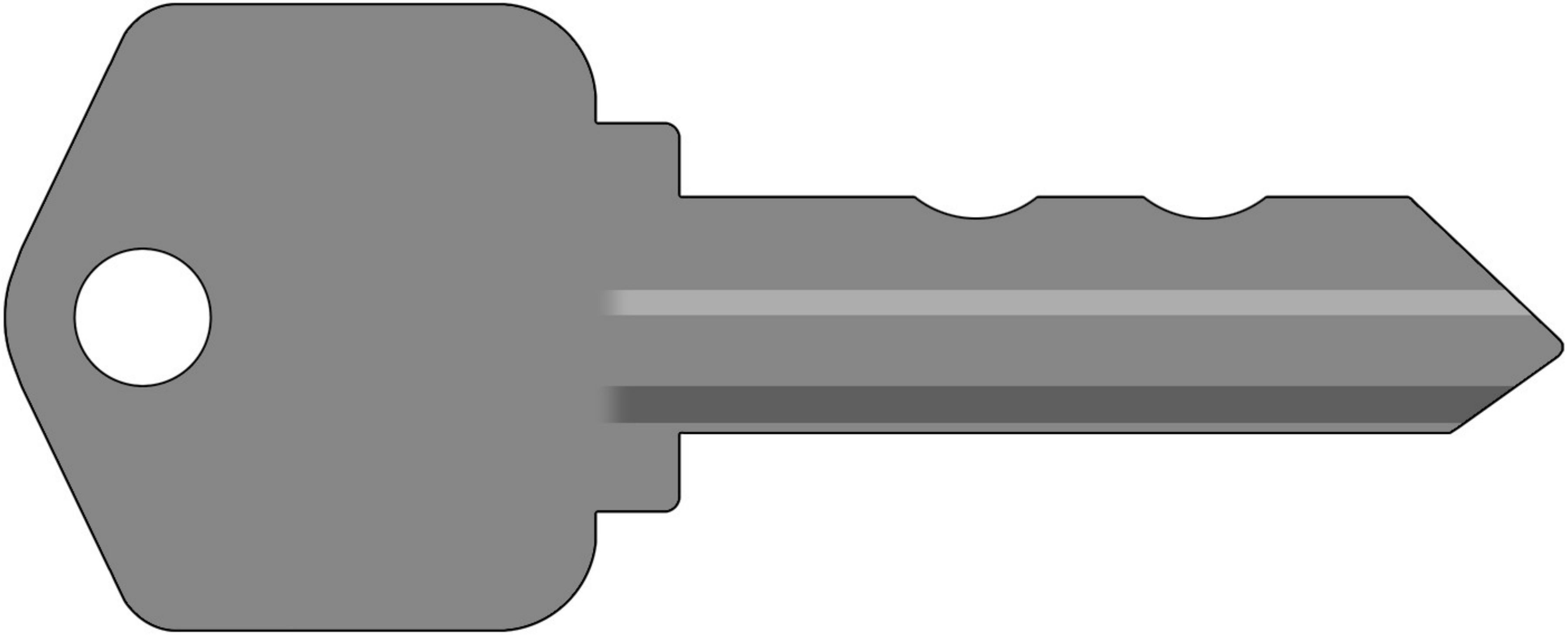
Impressioning – Continued Rub Marks



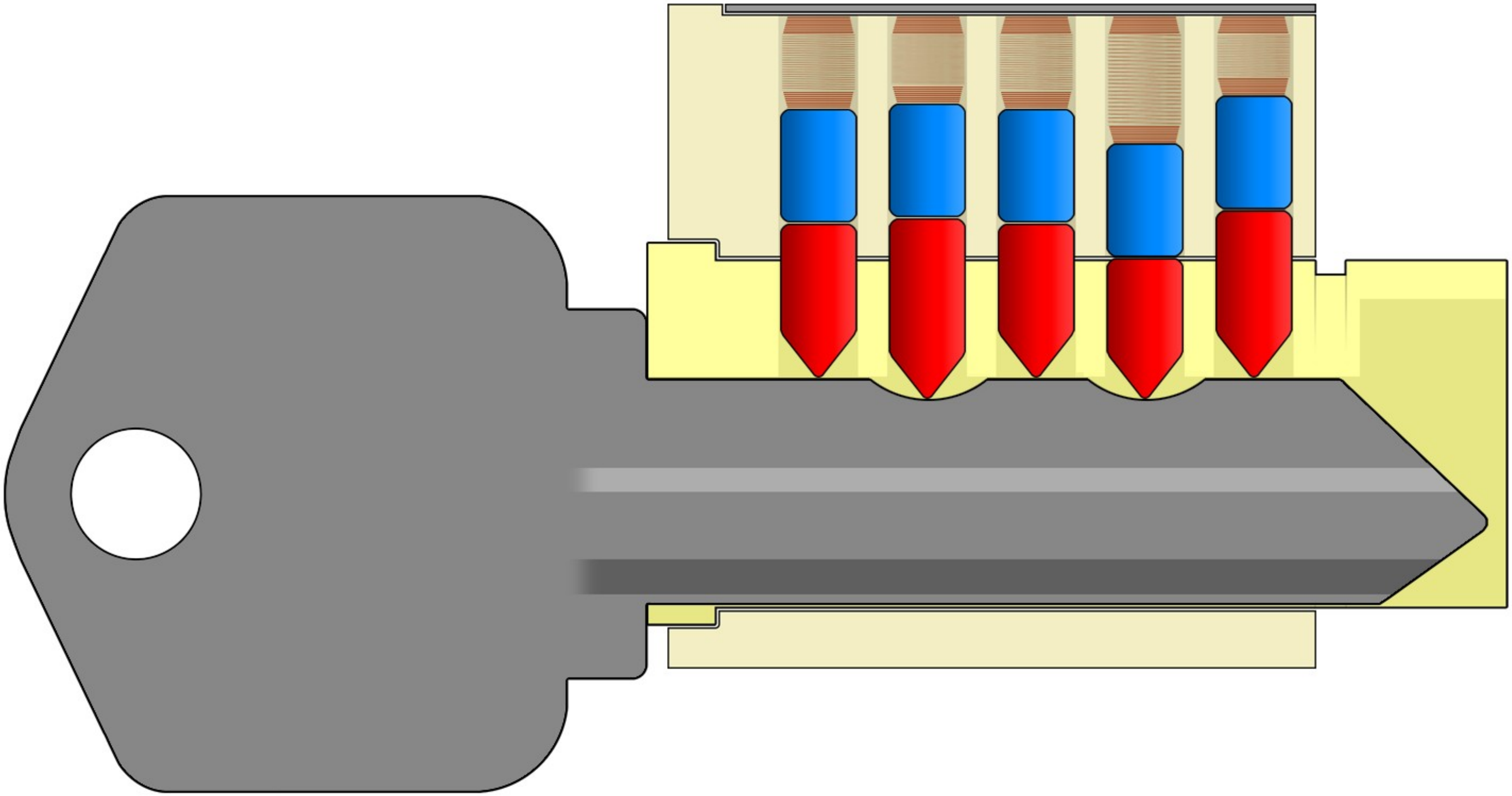
Impressioning – Continued Rub Marks



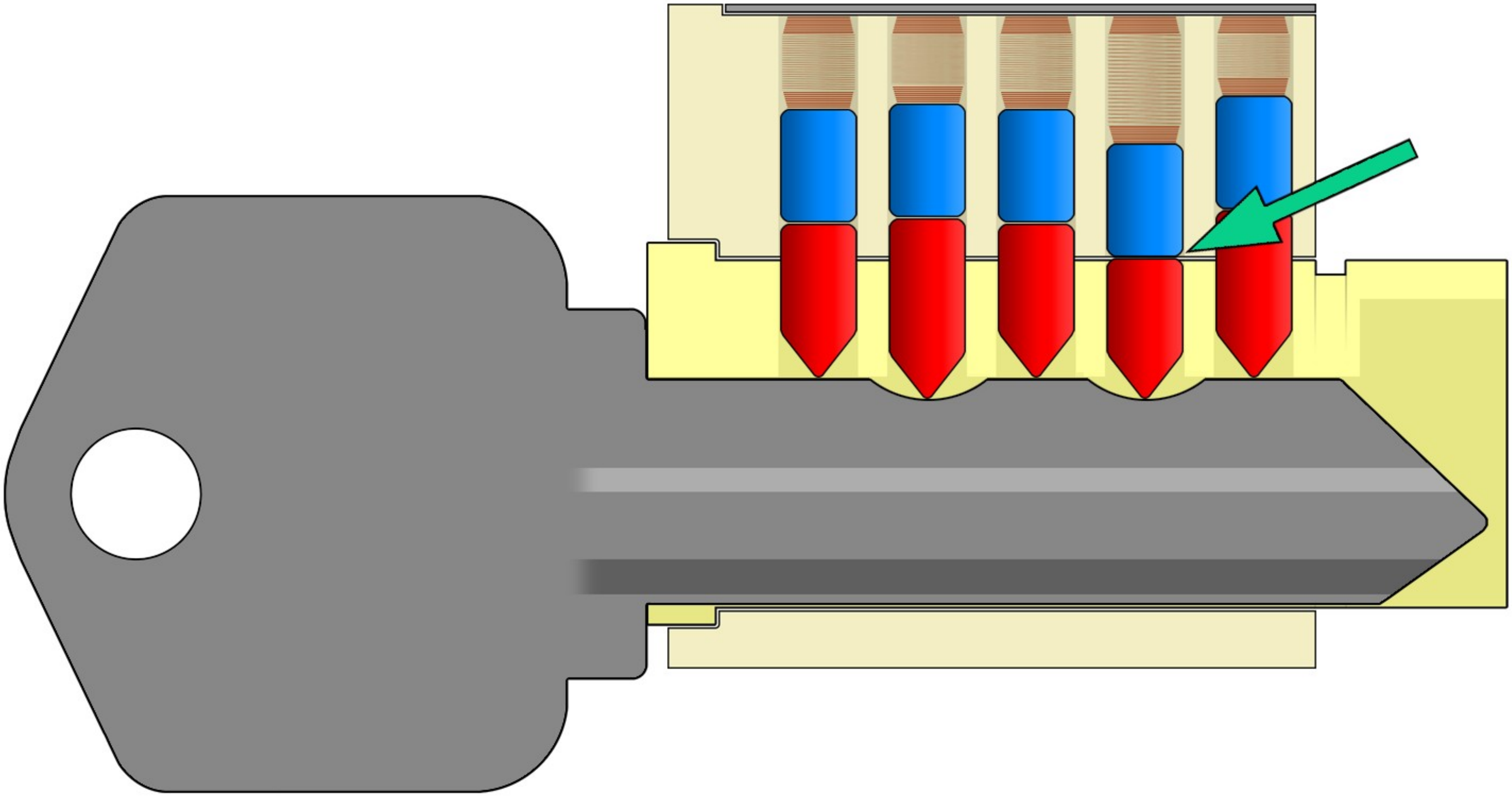
Impressioning – Continued Filing



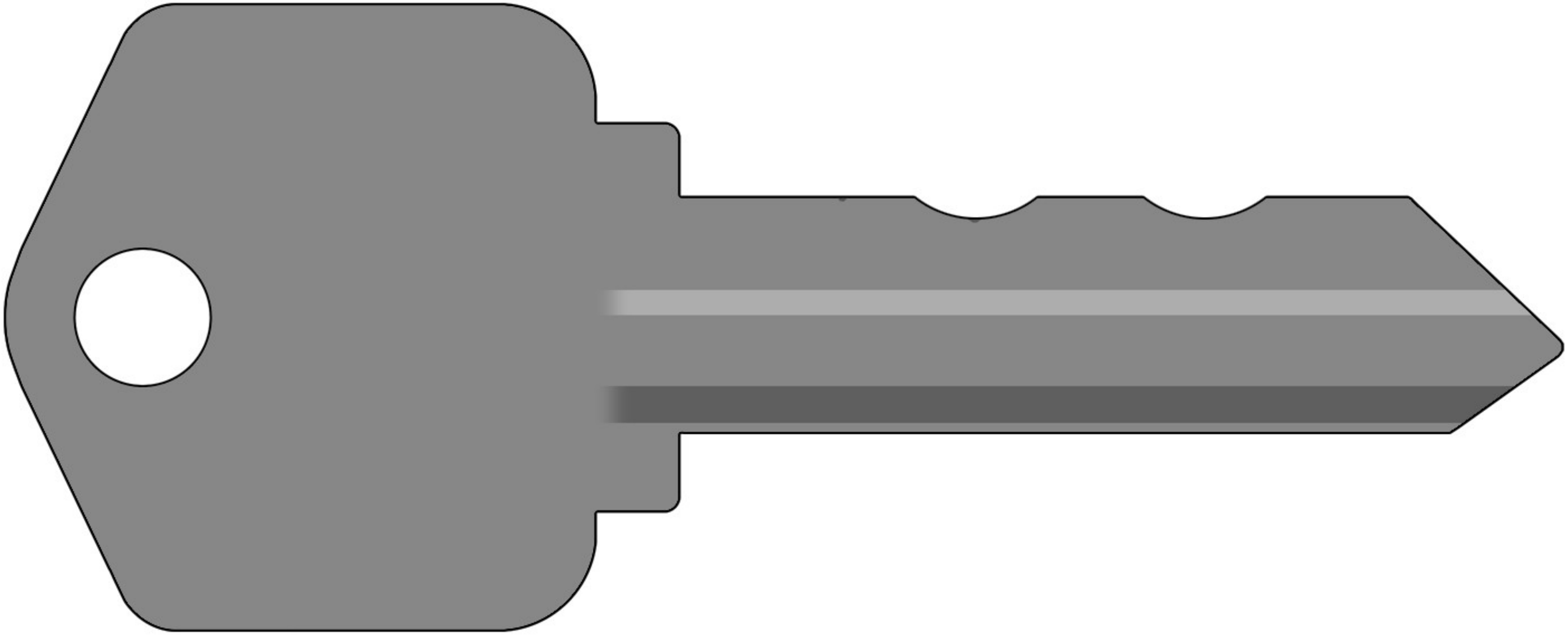
When the Key is Inserted Now…



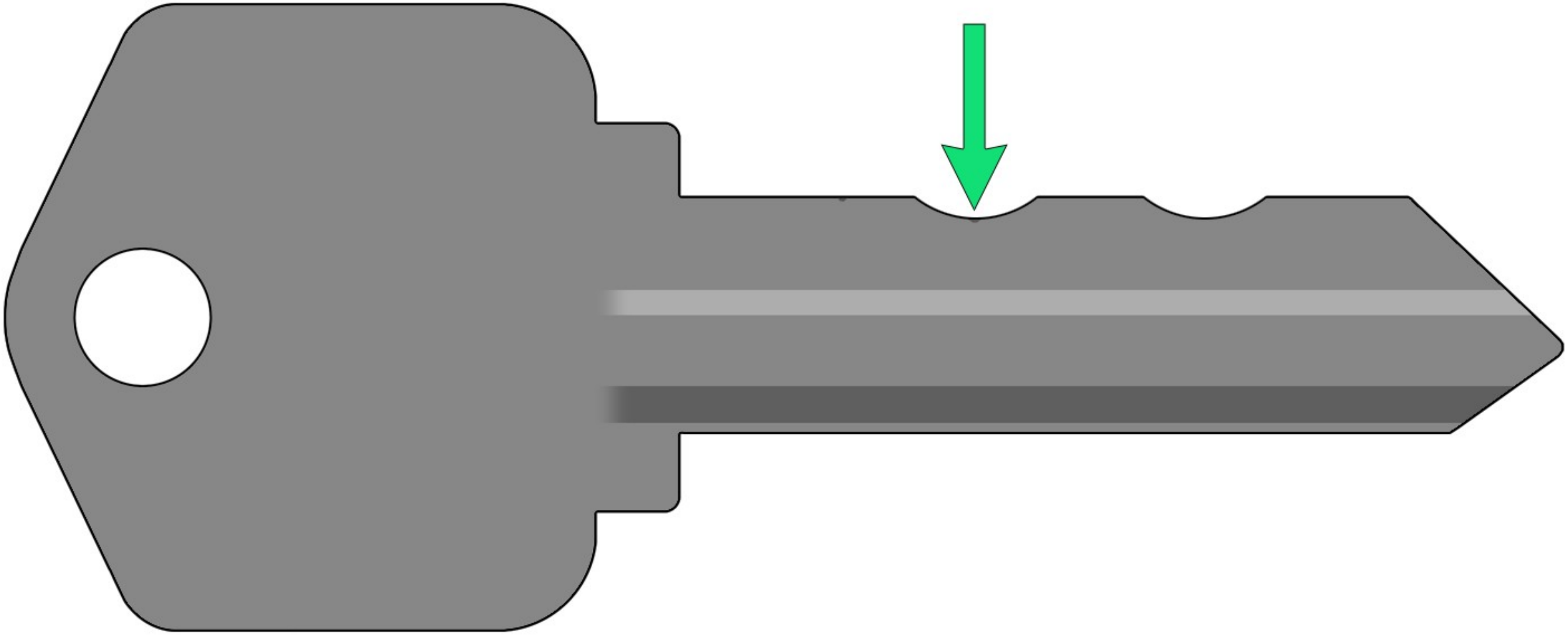
Pin Stack Number 4 is No Longer Binding



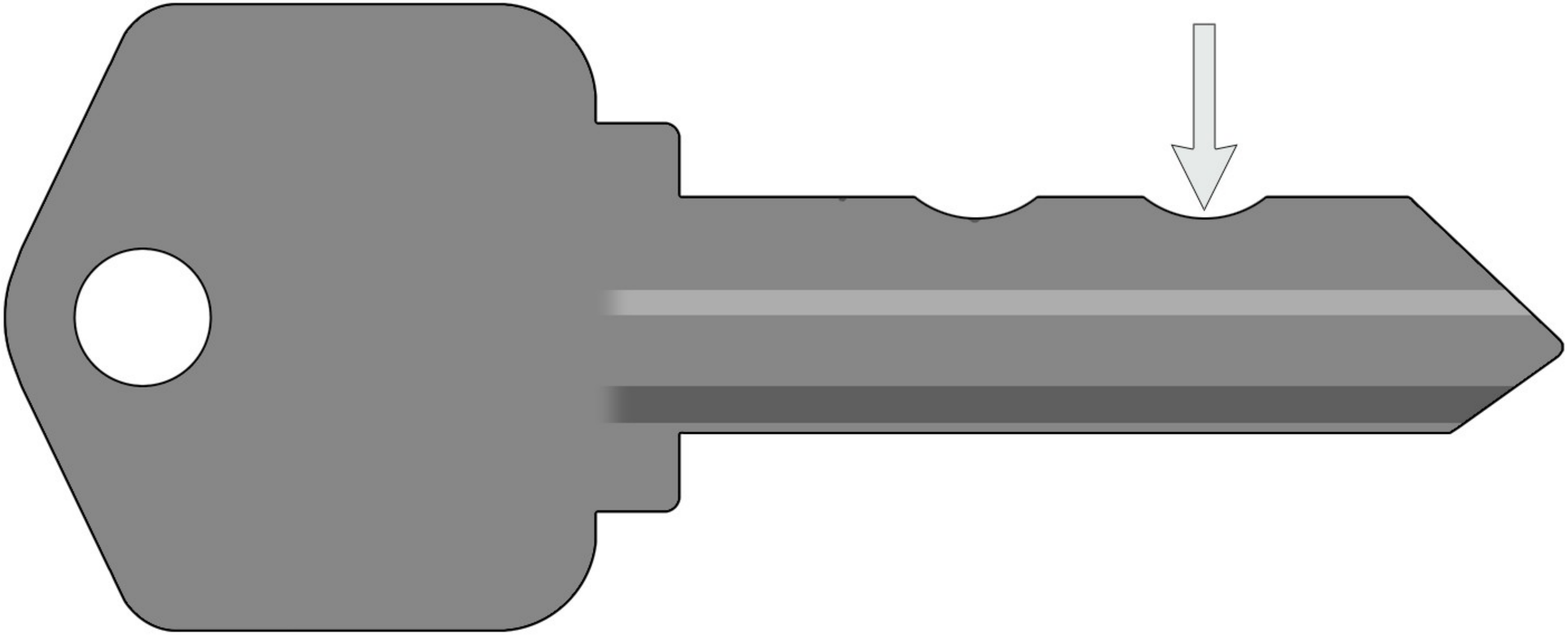
You'll Know This Has Happened When *New* Marks Appear



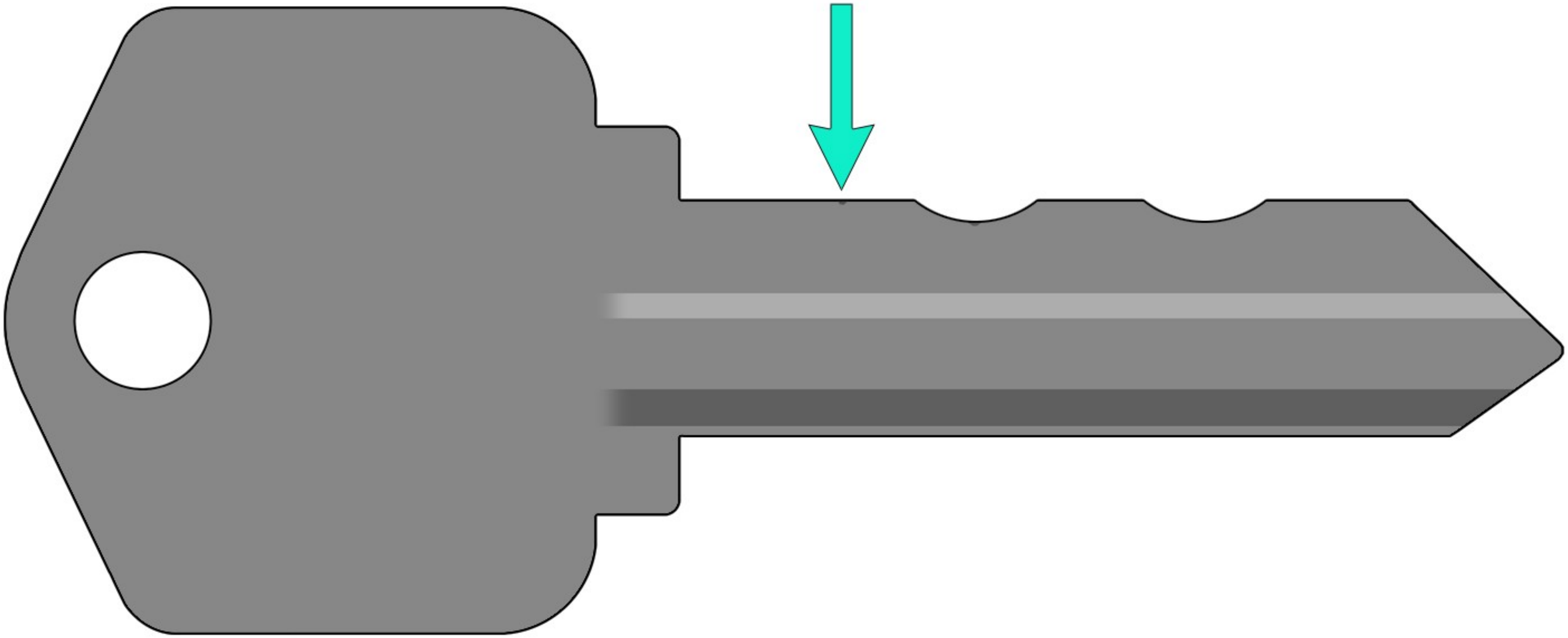
You'll Know This Has Happened When *New* Marks Appear



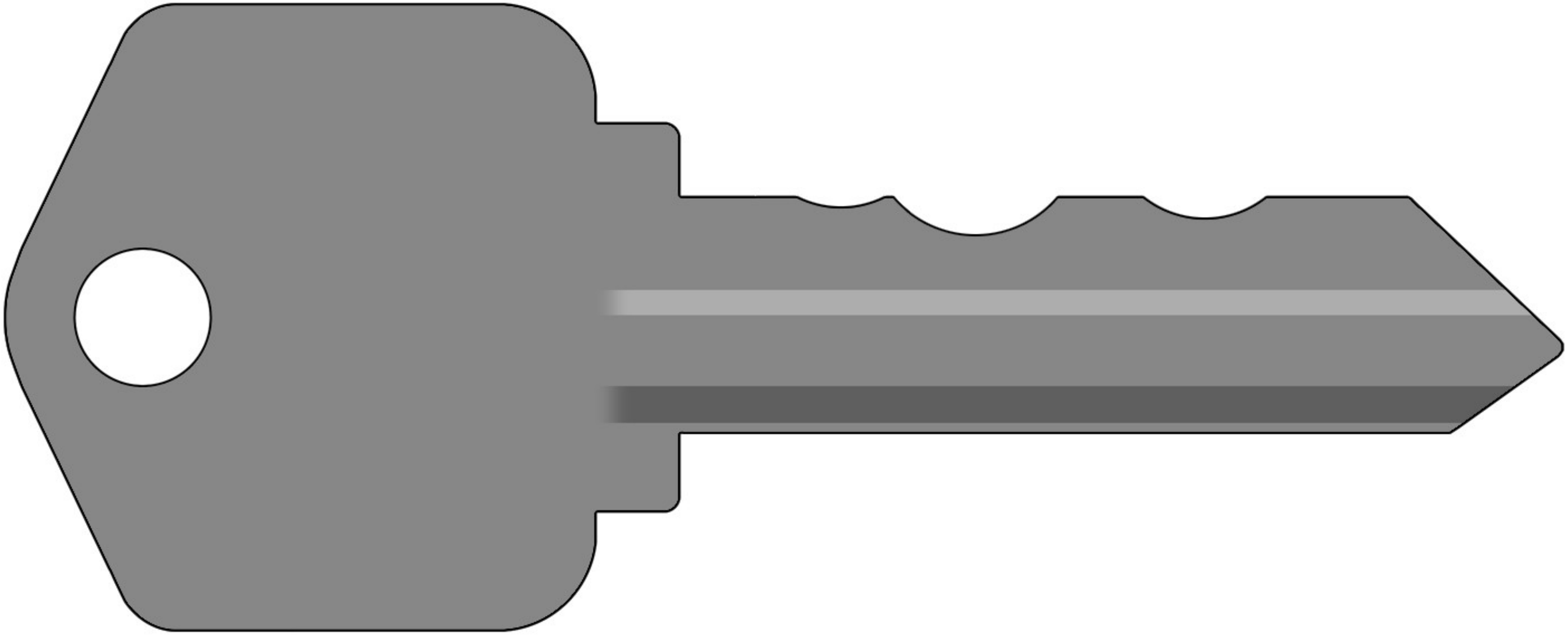
You'll Know This Has Happened When *New* Marks Appear



You'll Know This Has Happened When *New* Marks Appear



You’ll Know This Has Happened When *New* Marks Appear



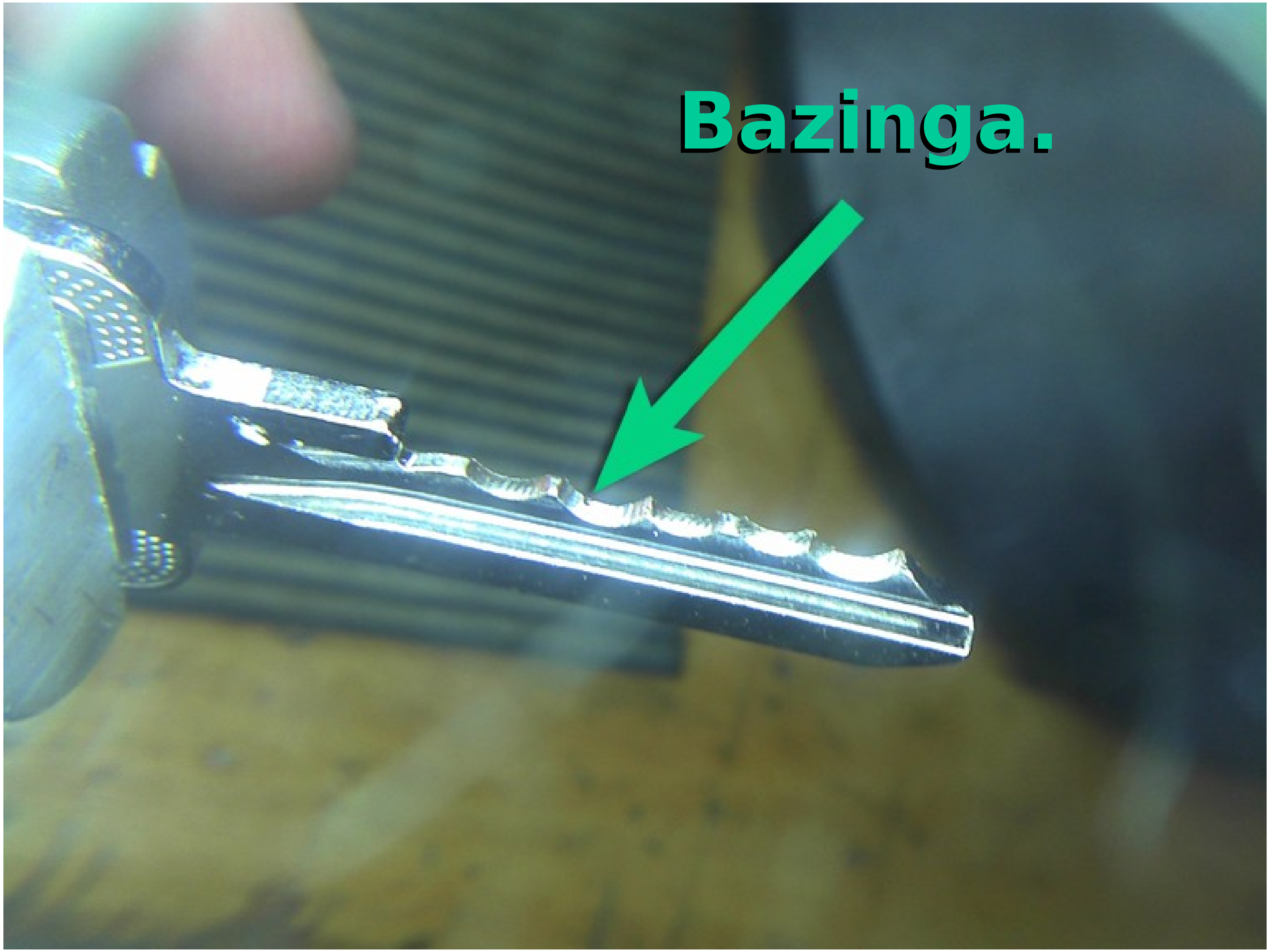
It's Delicate & Intricate Work



It's Delicate & Intricate Work



It's Delicate & Intricate Work



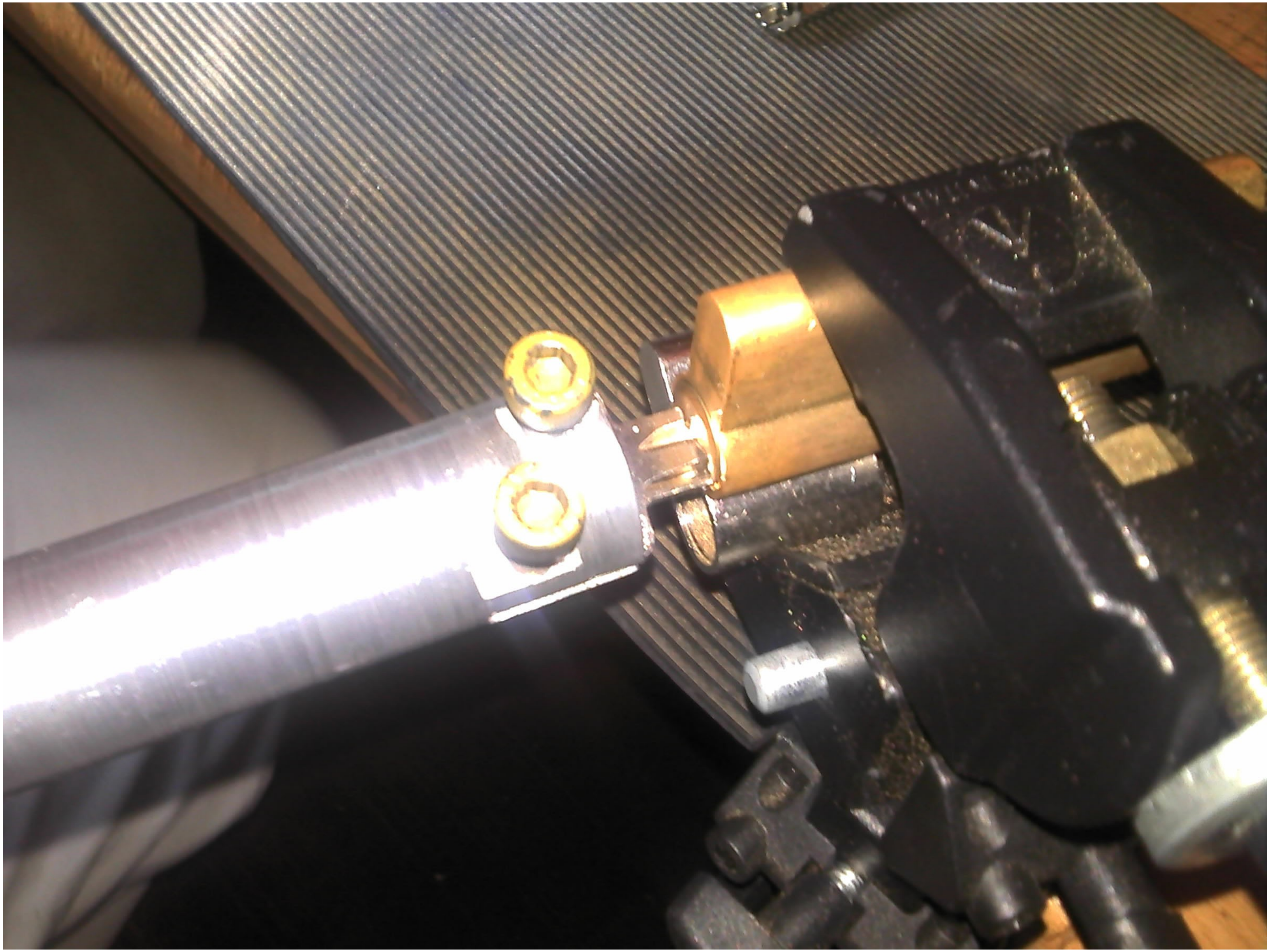
It's Delicate & Intricate Work



It's Delicate & Intricate Work



Open!



Open !



Open!



Impressioning Competitions



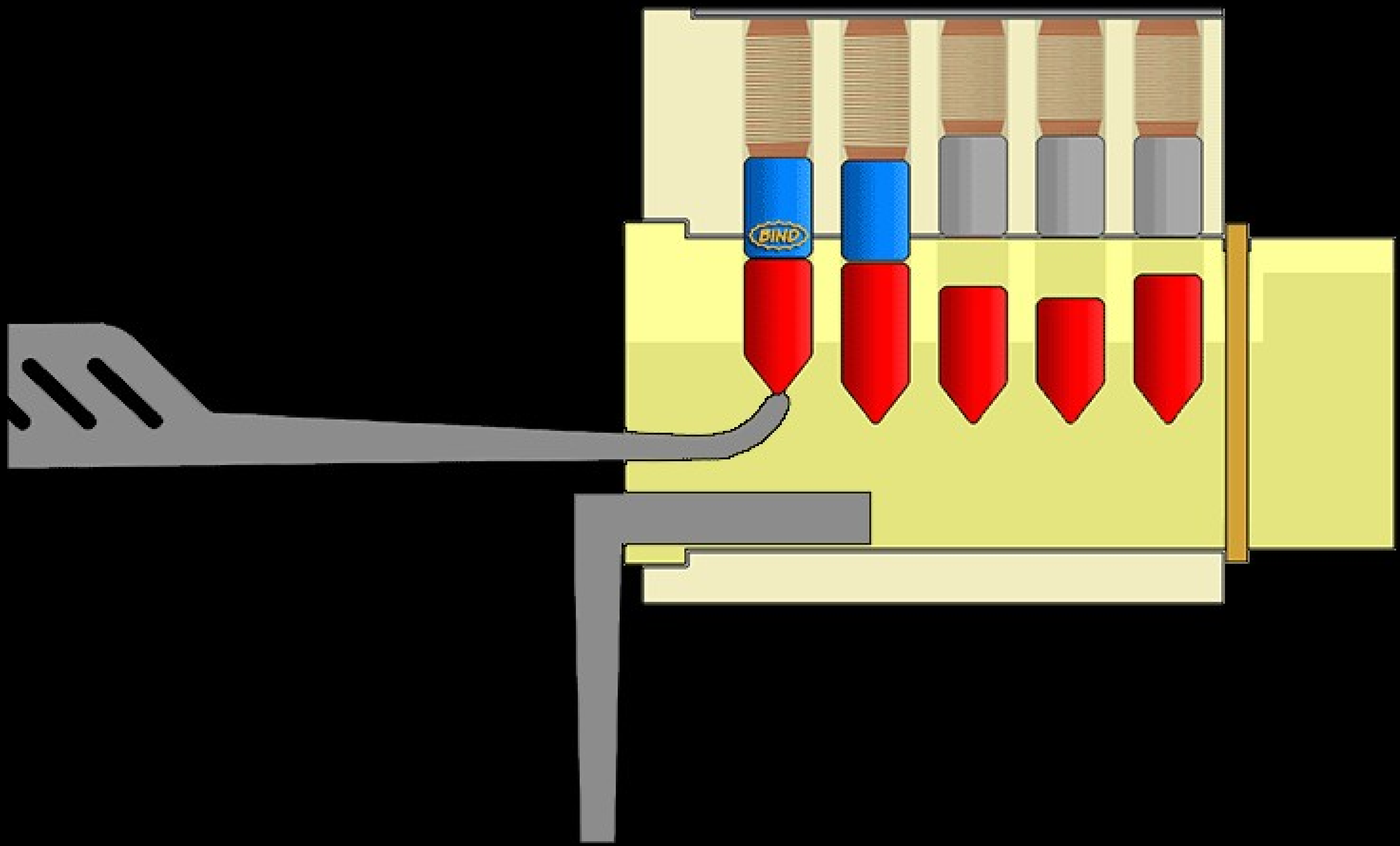
Impressioning Competitions



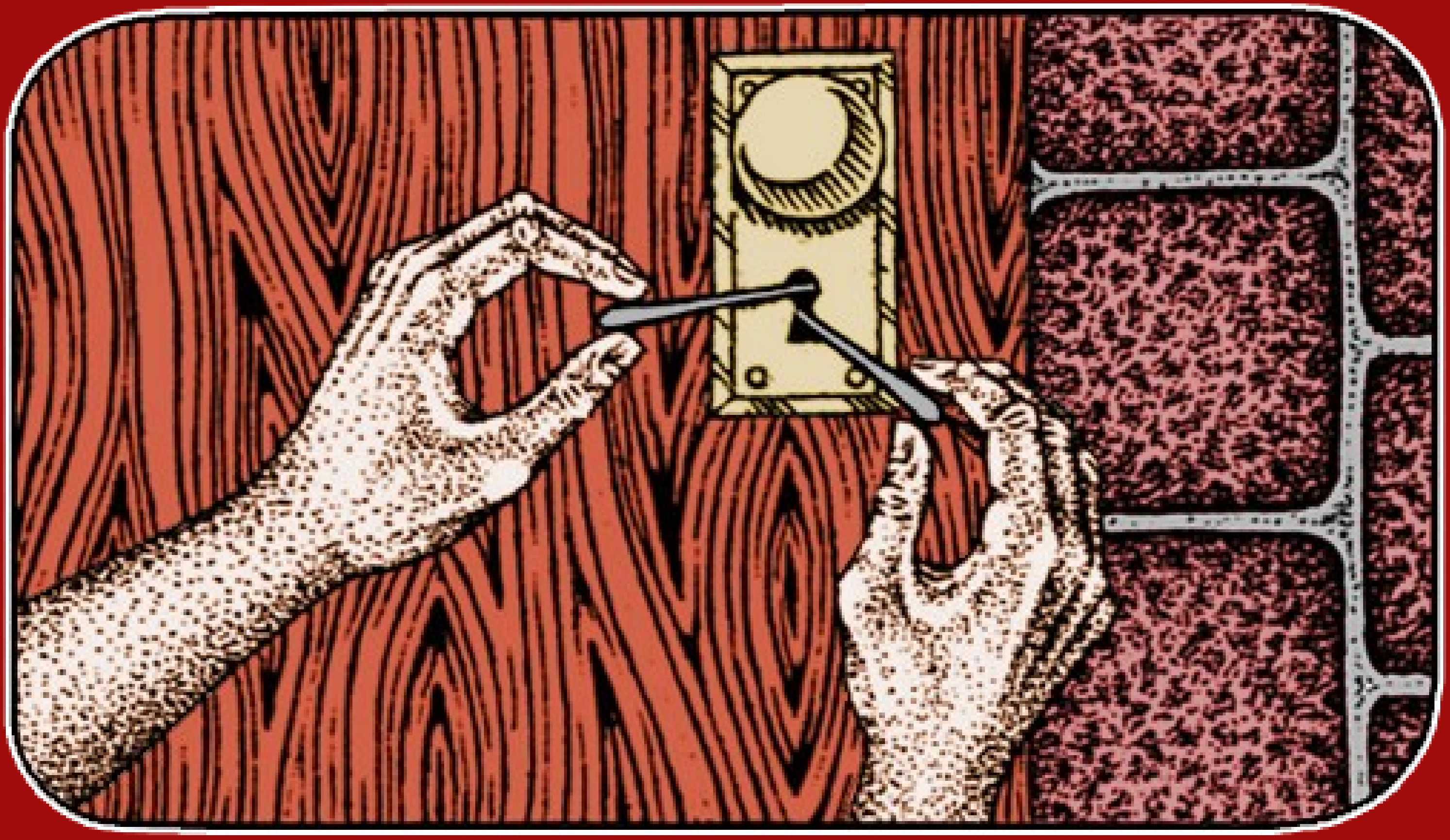
Impressioning Competitions



Questions?



Master-Keyed Systems

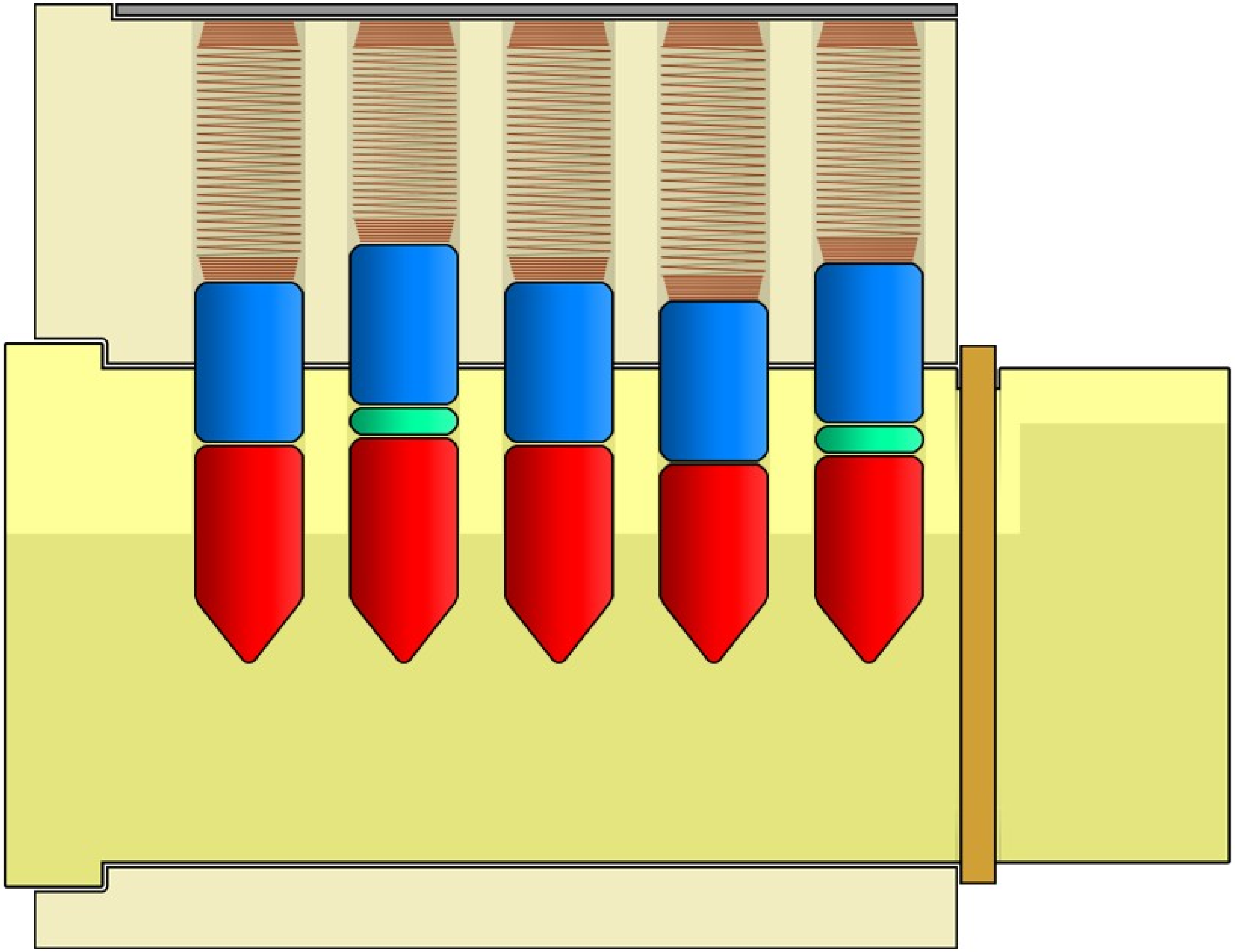


Master-Keyed Systems

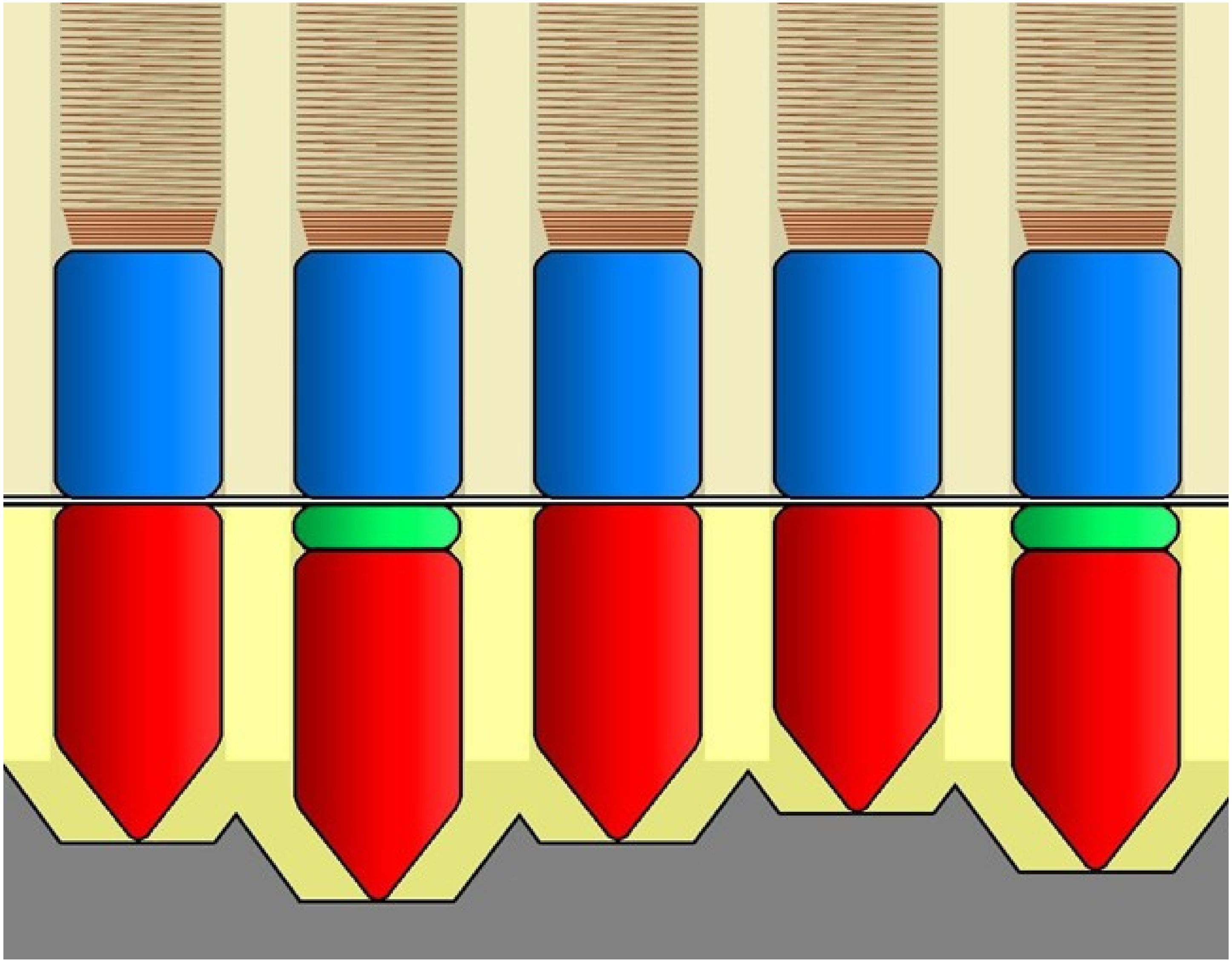
- Varied permissions
- Sometimes keywa
- Privilege Escalatio



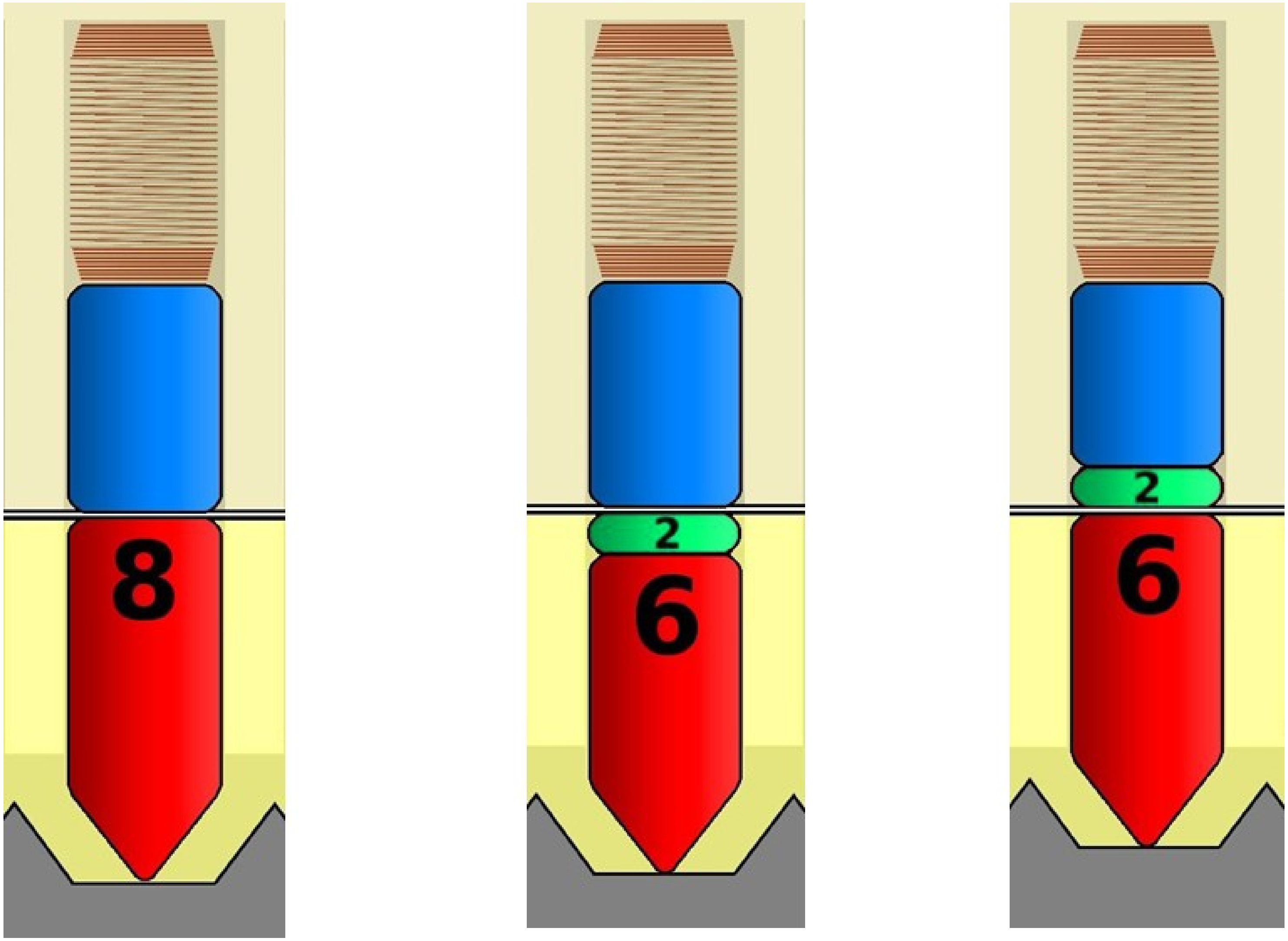
Master-Keyed Systems



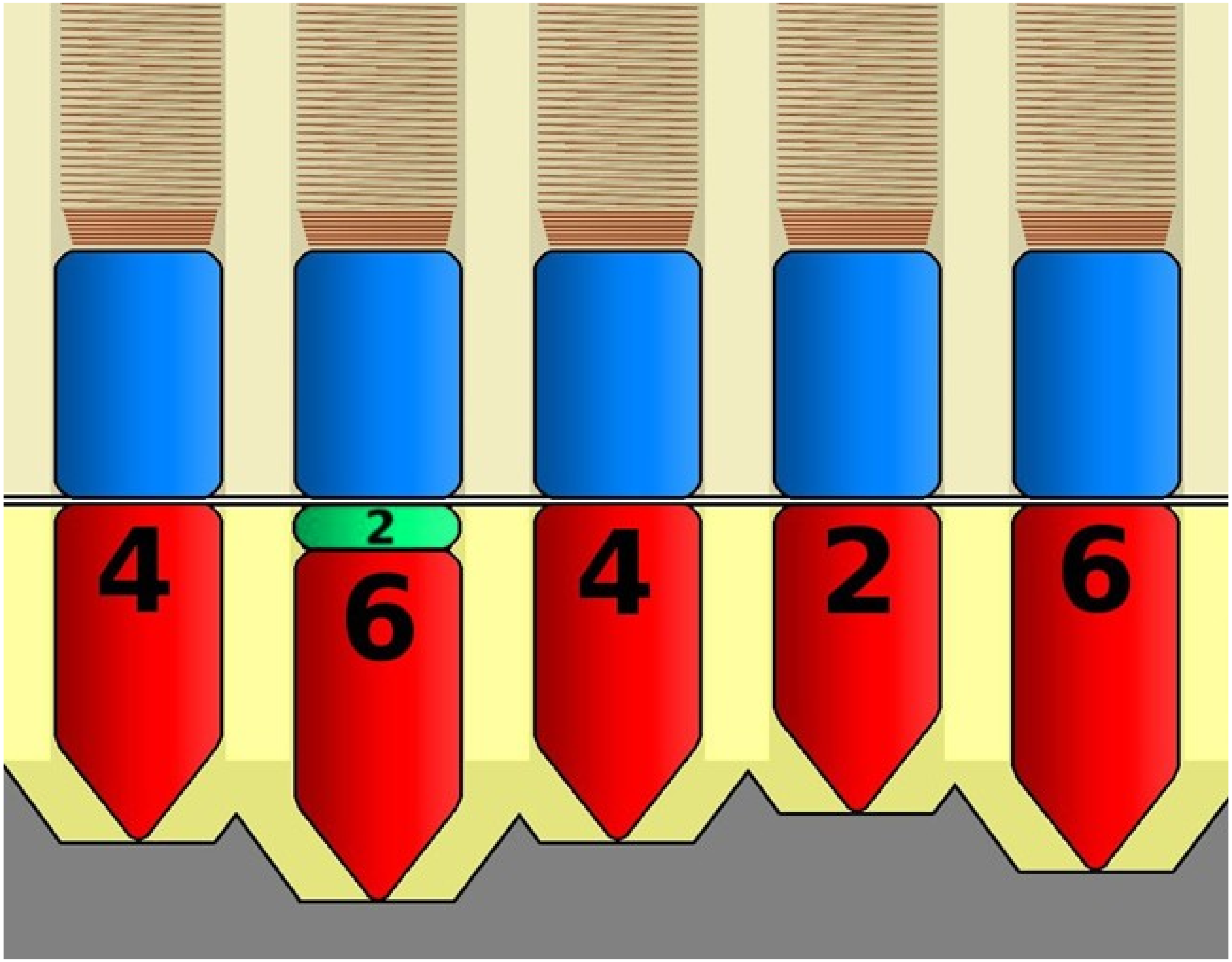
Master-Keyed Systems



Master-Keyed Systems

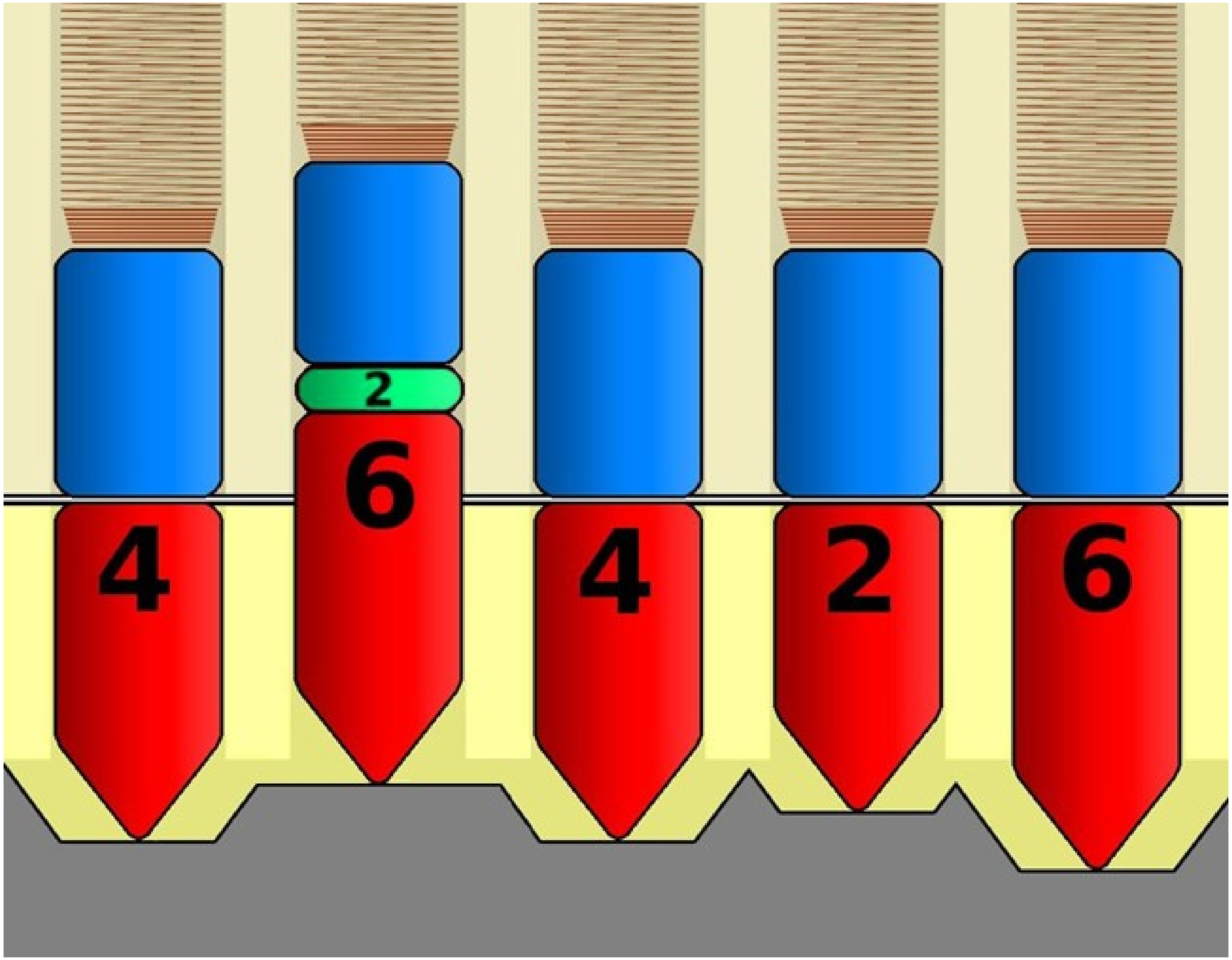


Finding the Master Bitting Depths



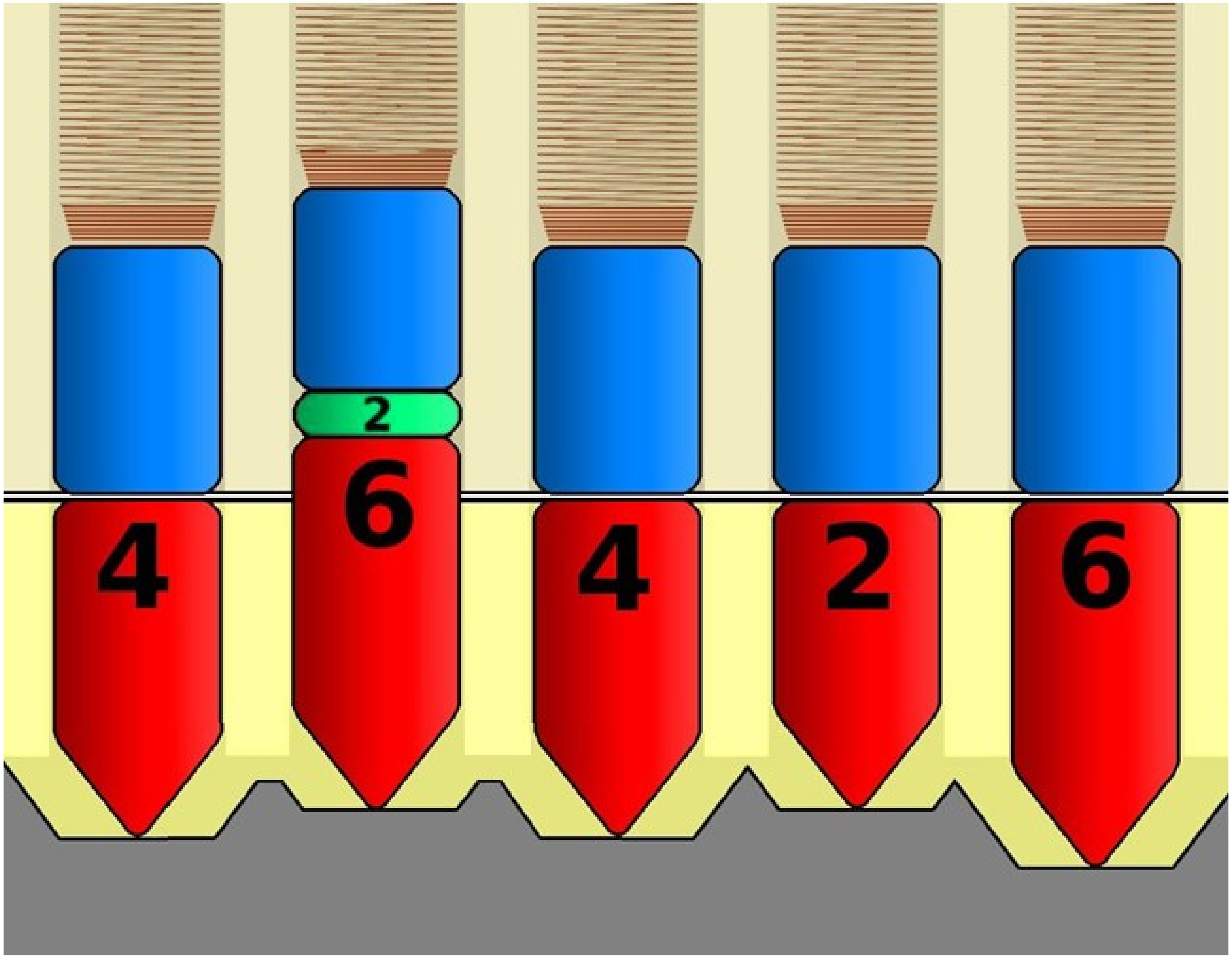
8 ***Original key cut***

Finding the Master Bitting Depths



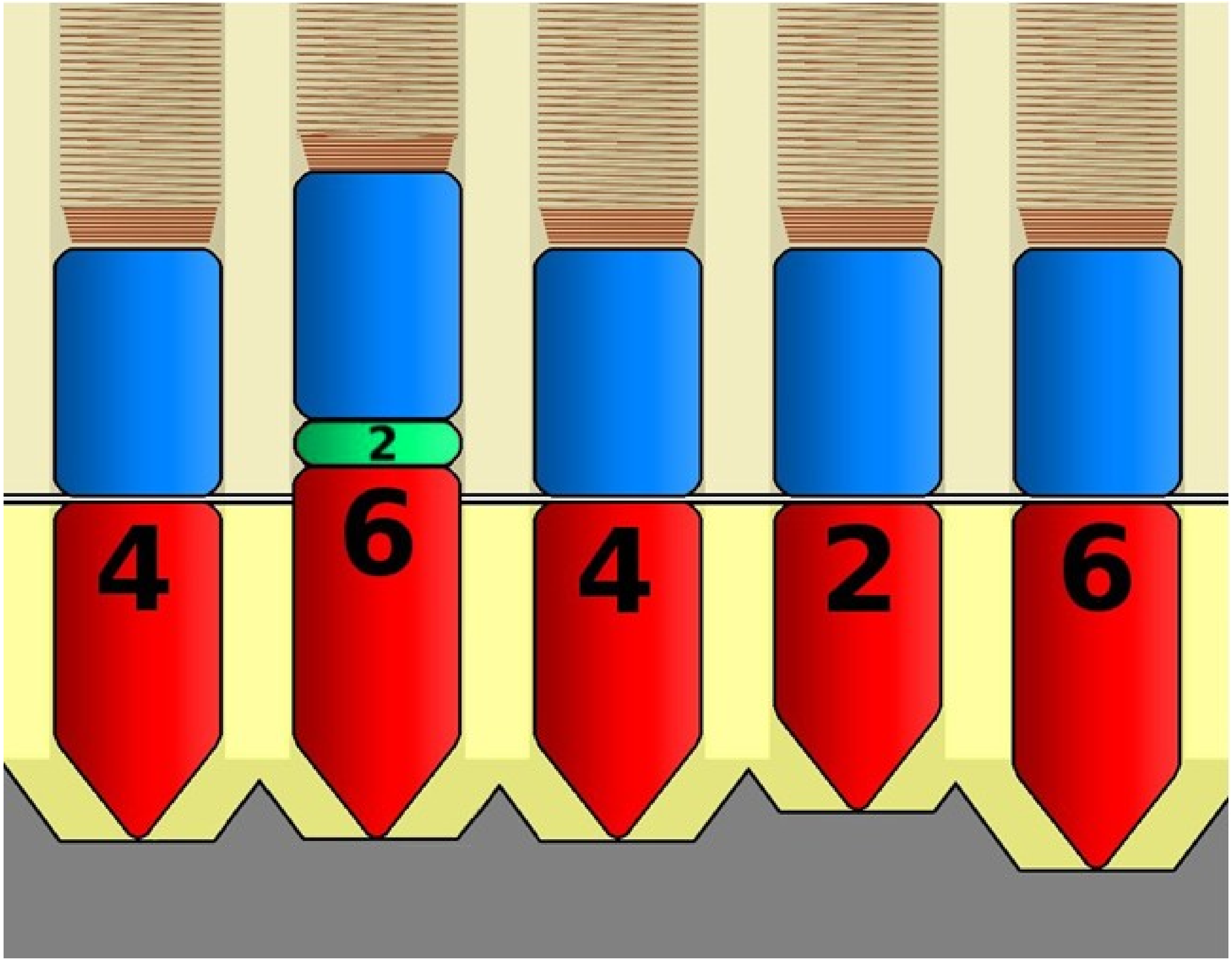
0 ***Leave this position***

Finding the Master Bitting Depths



2 ***Cut down slightly... Lock does not open***

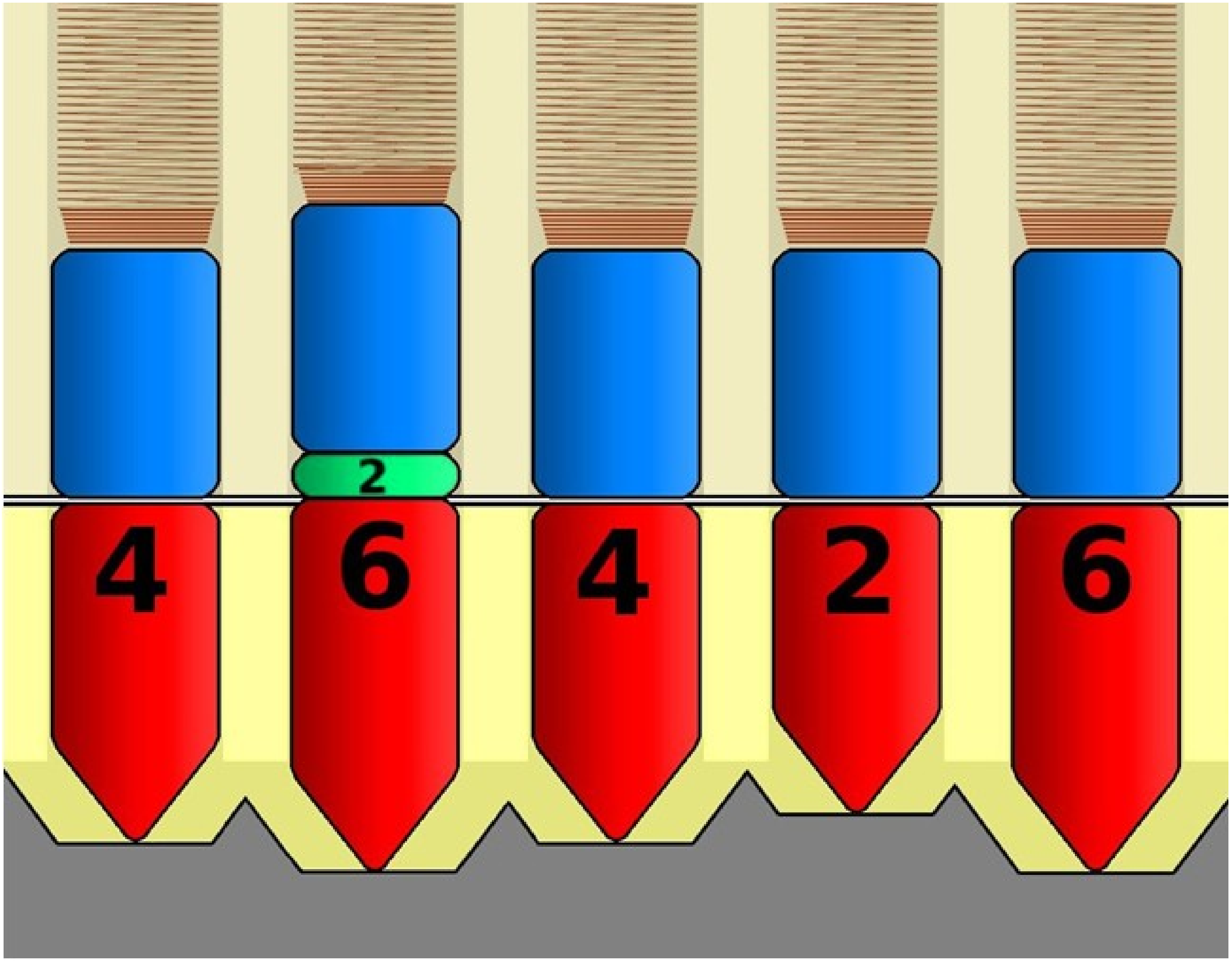
Finding the Master Bitting Depths



4 ***Cut down a little more...***

Lock still does not open

Finding the Master Bitting Depths



6 ***Cut down more...*** ***Lock opens!***

Finding the Master Bitting Depths



"Master-Keyed Lock Vulnerability"

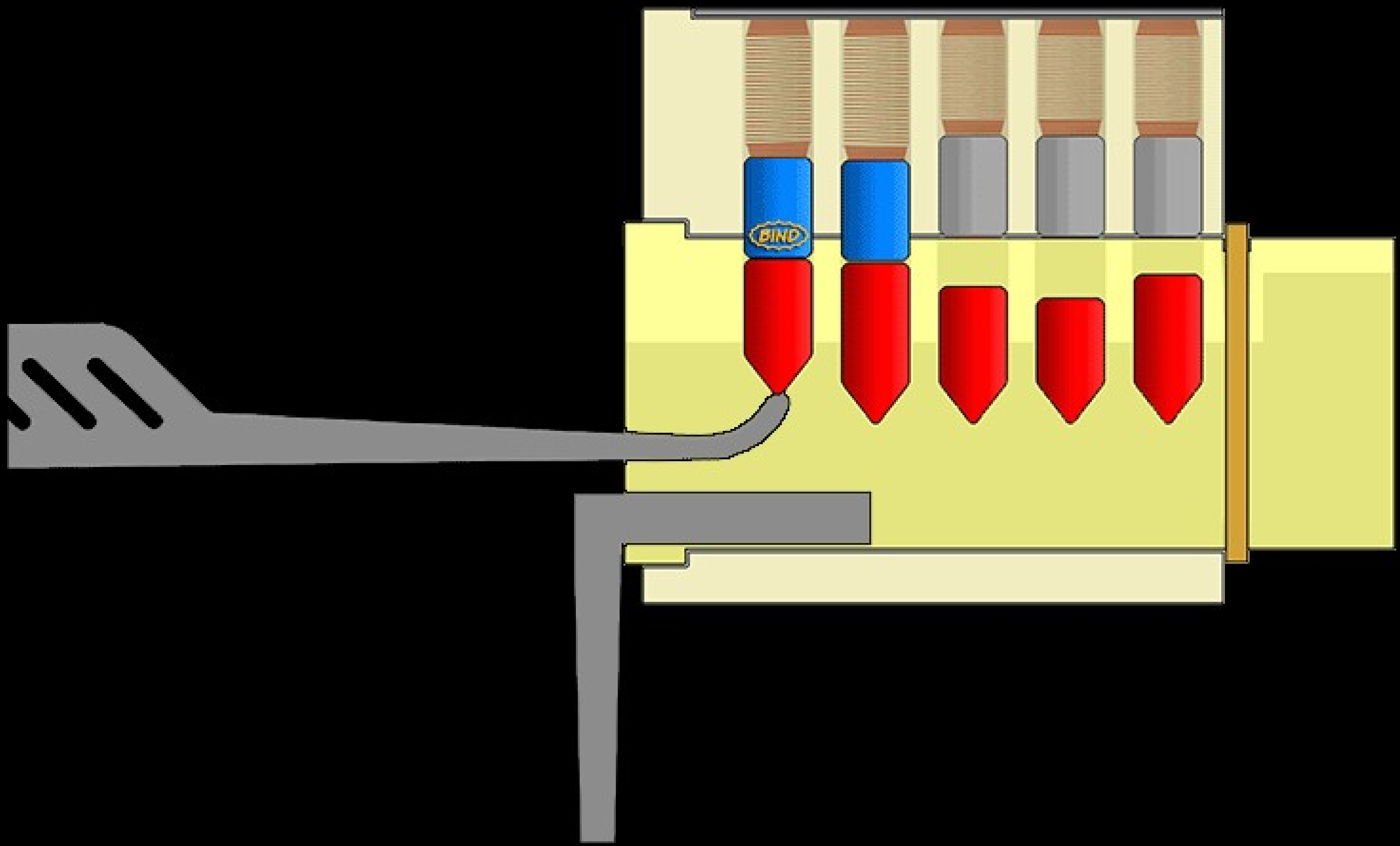
by Matt Blaze

2003-01-27

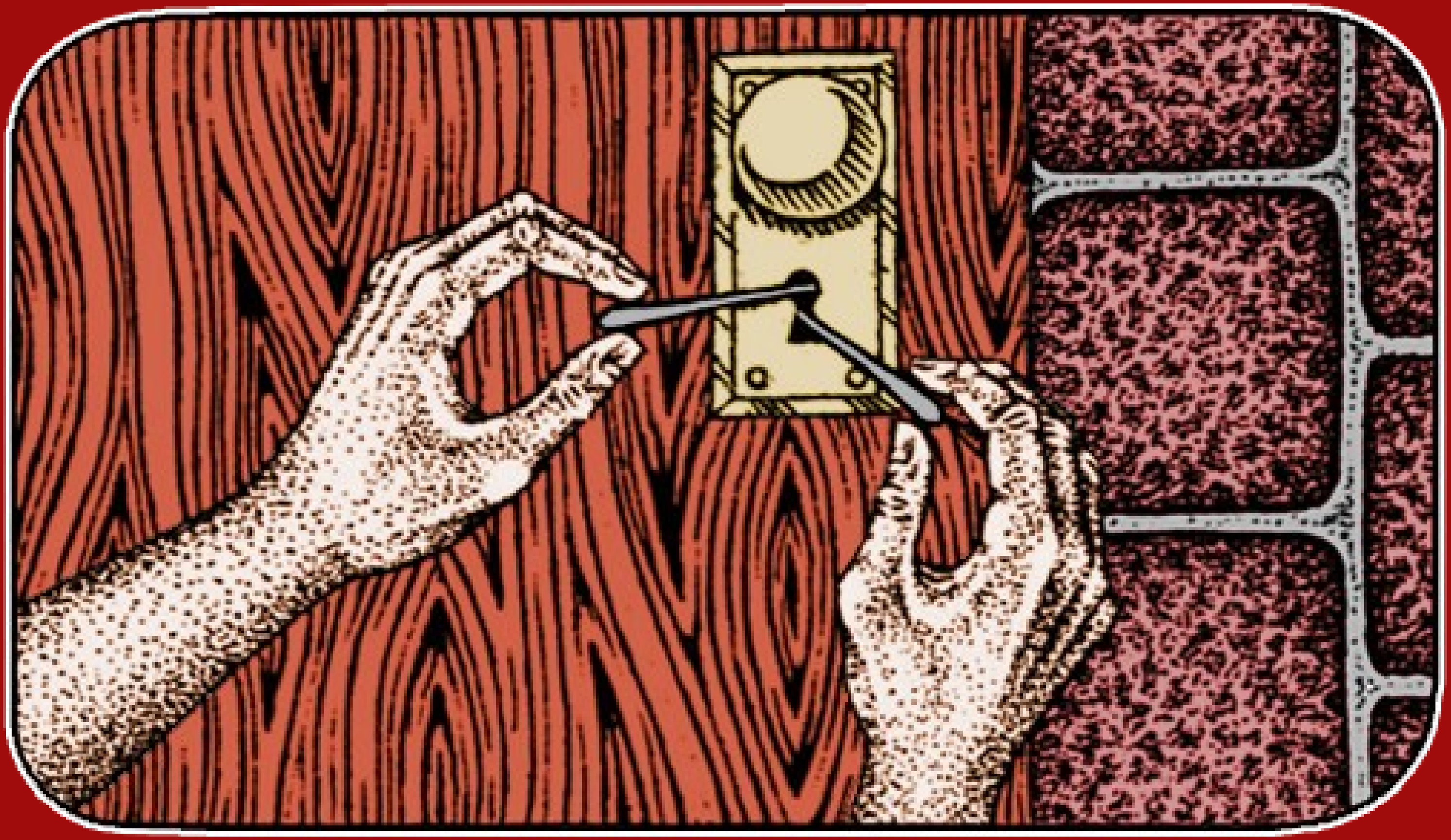
http://www.crypto.com/papers/mk.pdf

http://www.crypto.com/masterkey.html

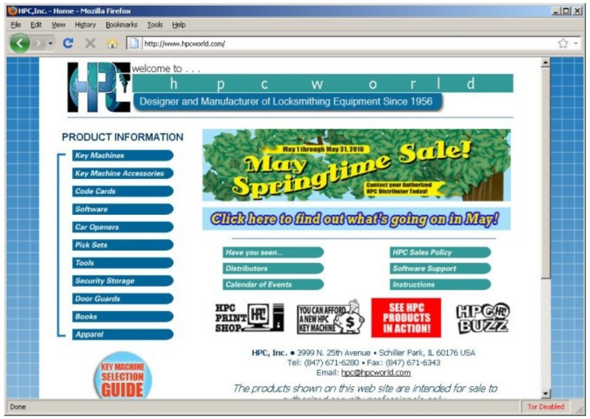
Questions?

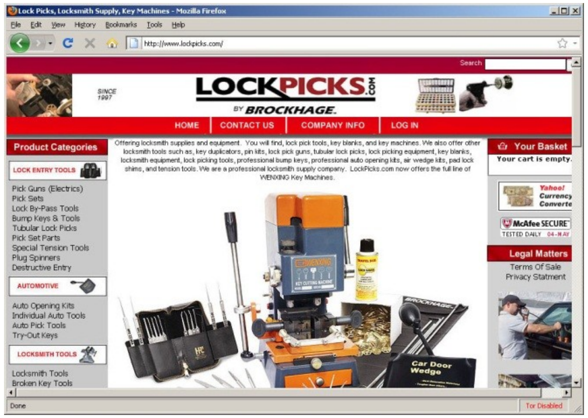


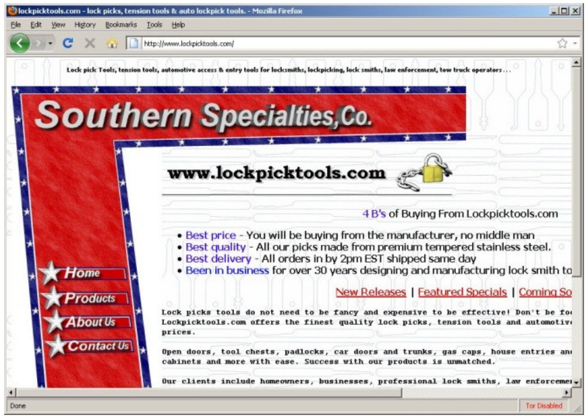
Distinguishing Picks



There are many lockpick vendors...



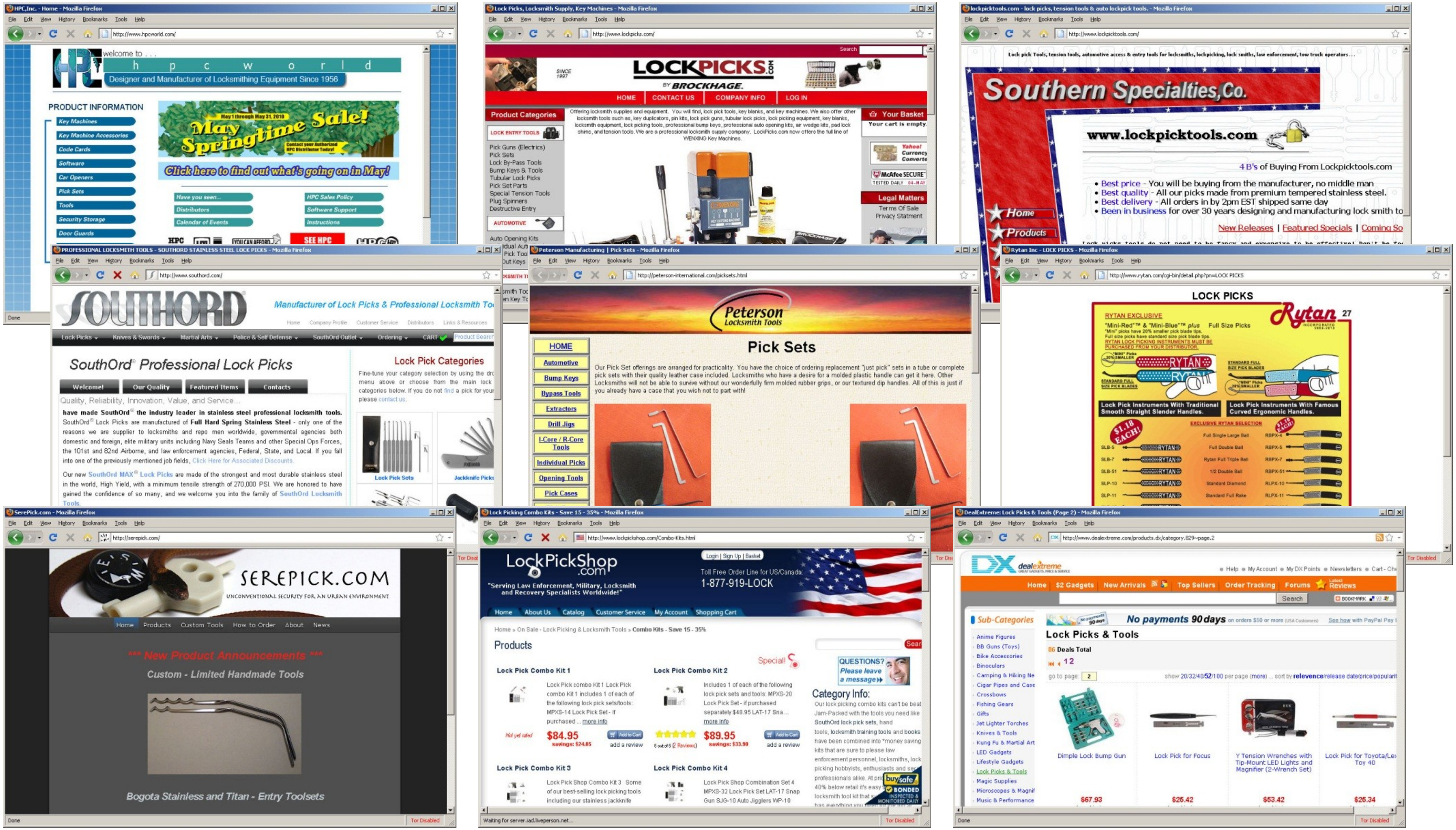




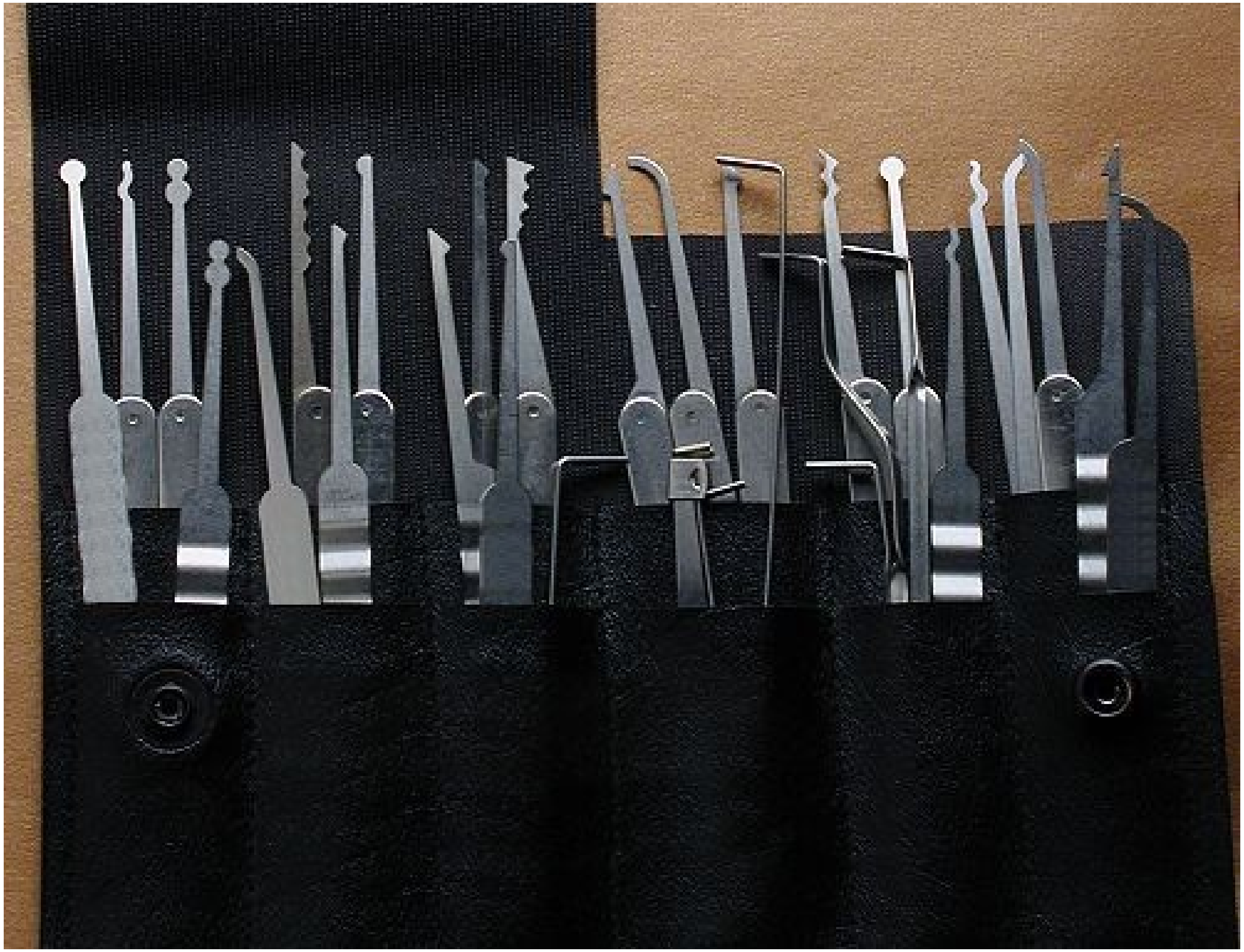
There are many lockpick vendors…



There are many lockpick vendors…



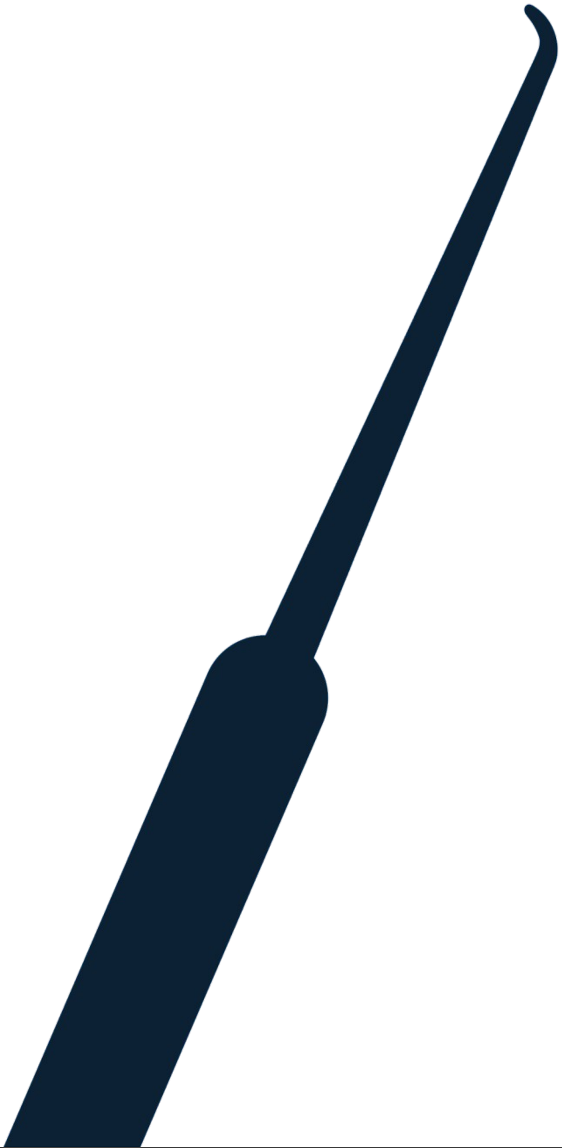
Selling many lockpicking tools



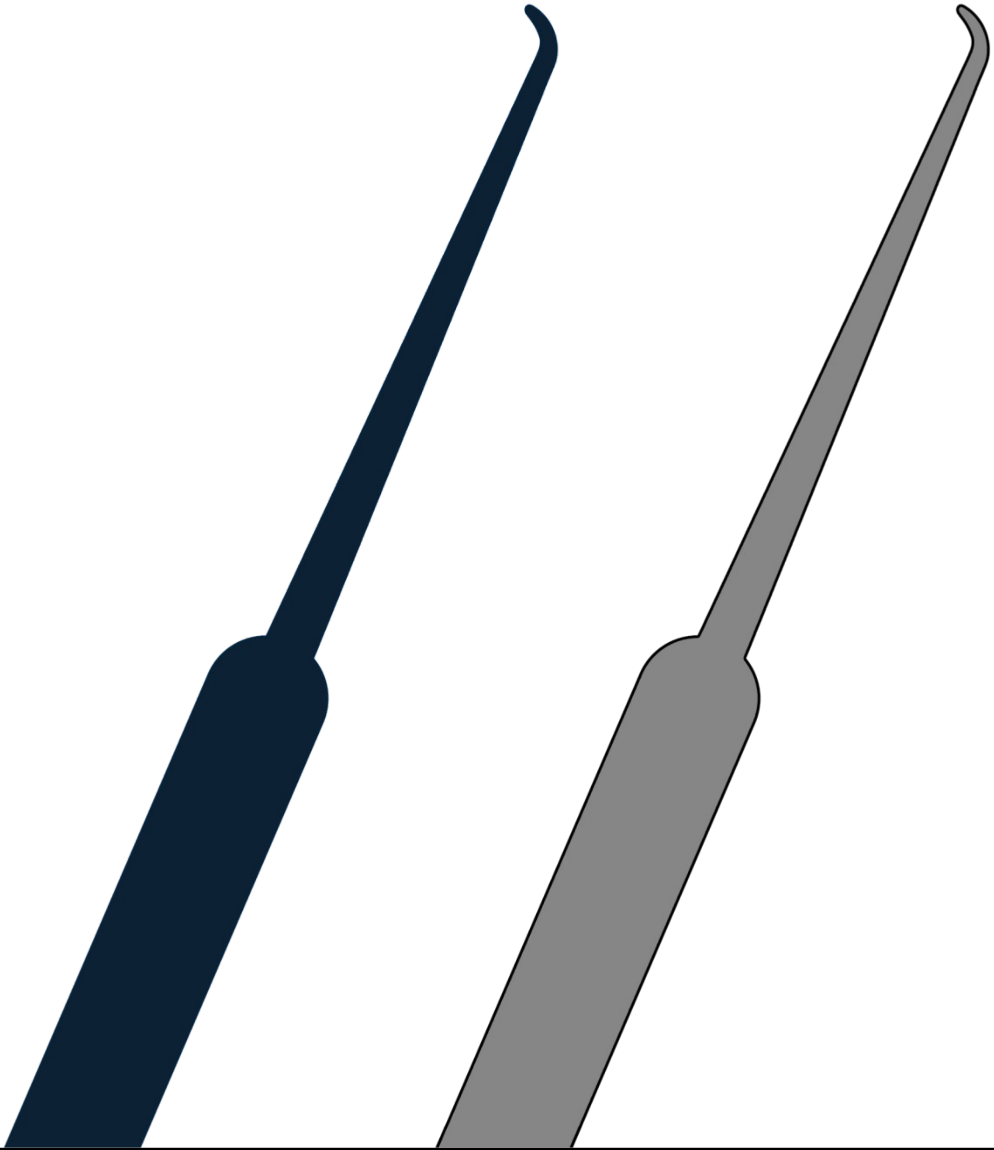
First, let's talk about metal…



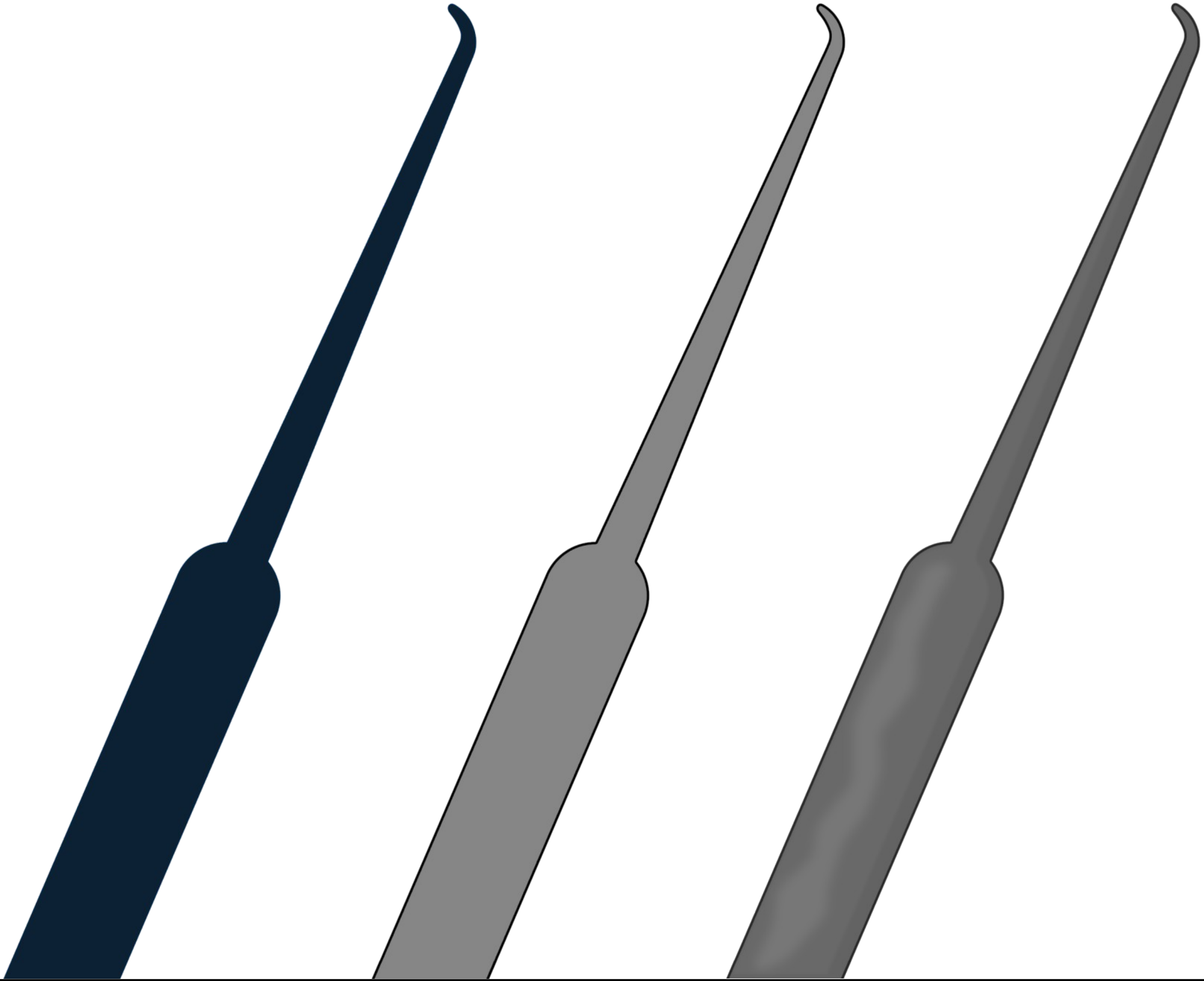
Spring Steel



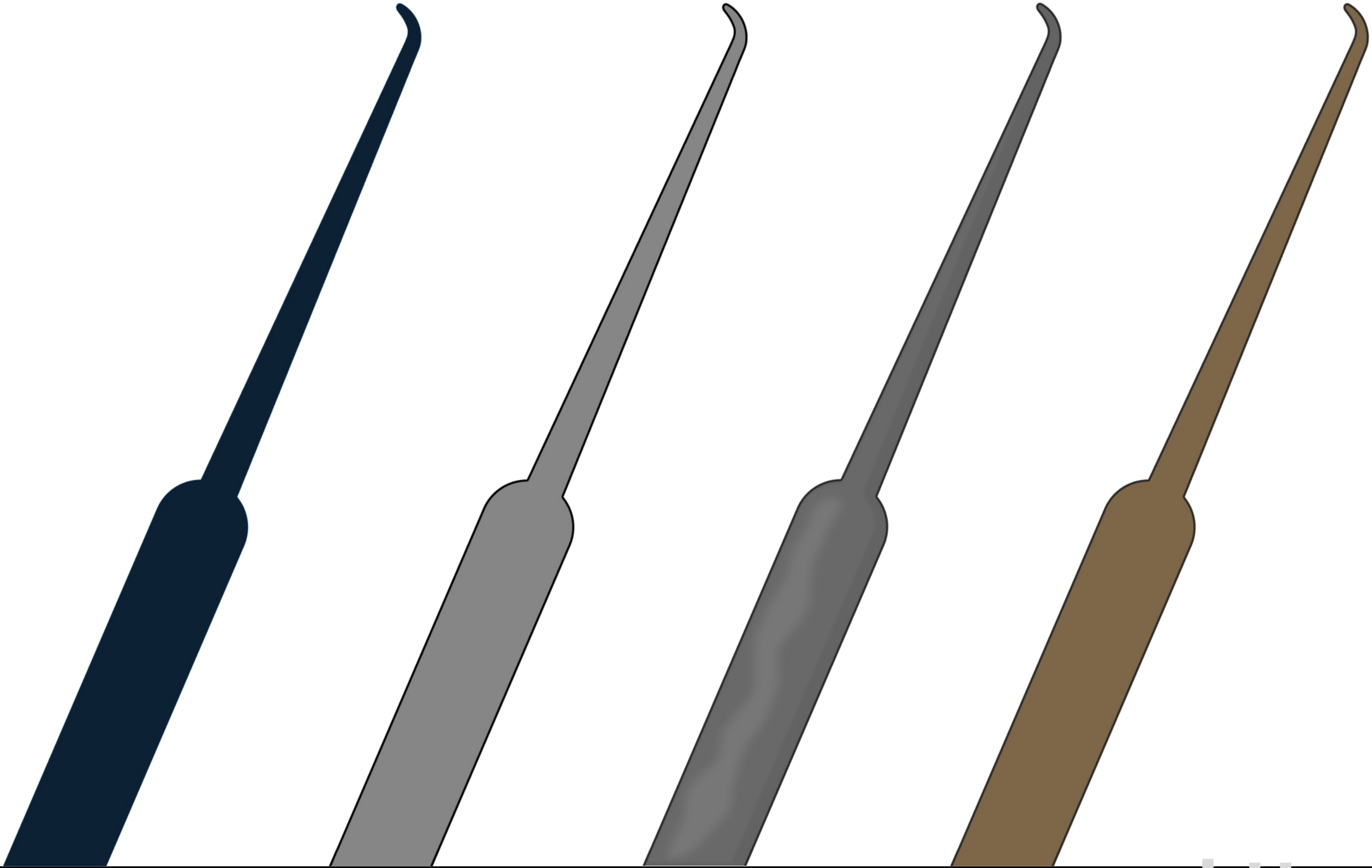
Stainless Steel



Titanium



Other Metals?



Thickness



0.015" – Peterson "Government Steel"

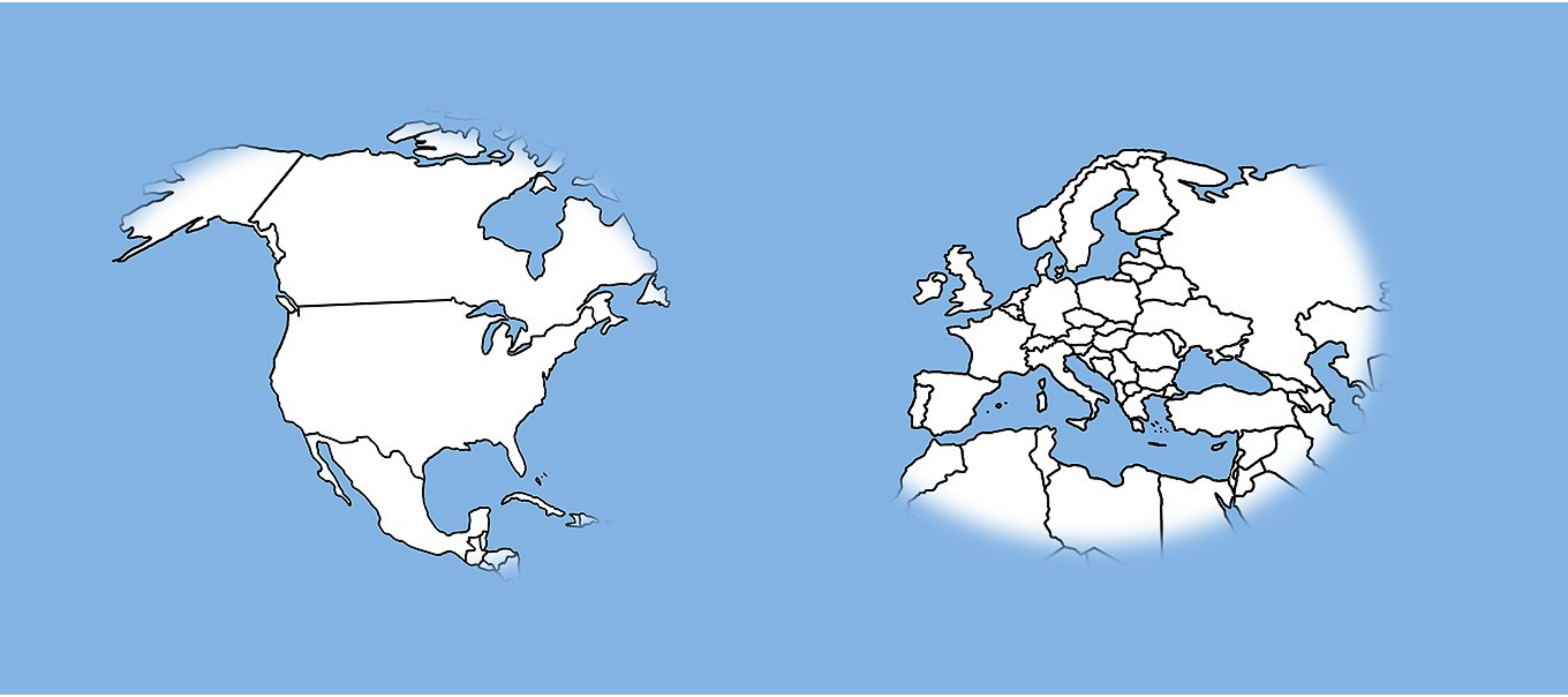
0.020" – SouthOrd, Rytan, Southern Specialties, TOOOL

0.022" – HPC Stainless

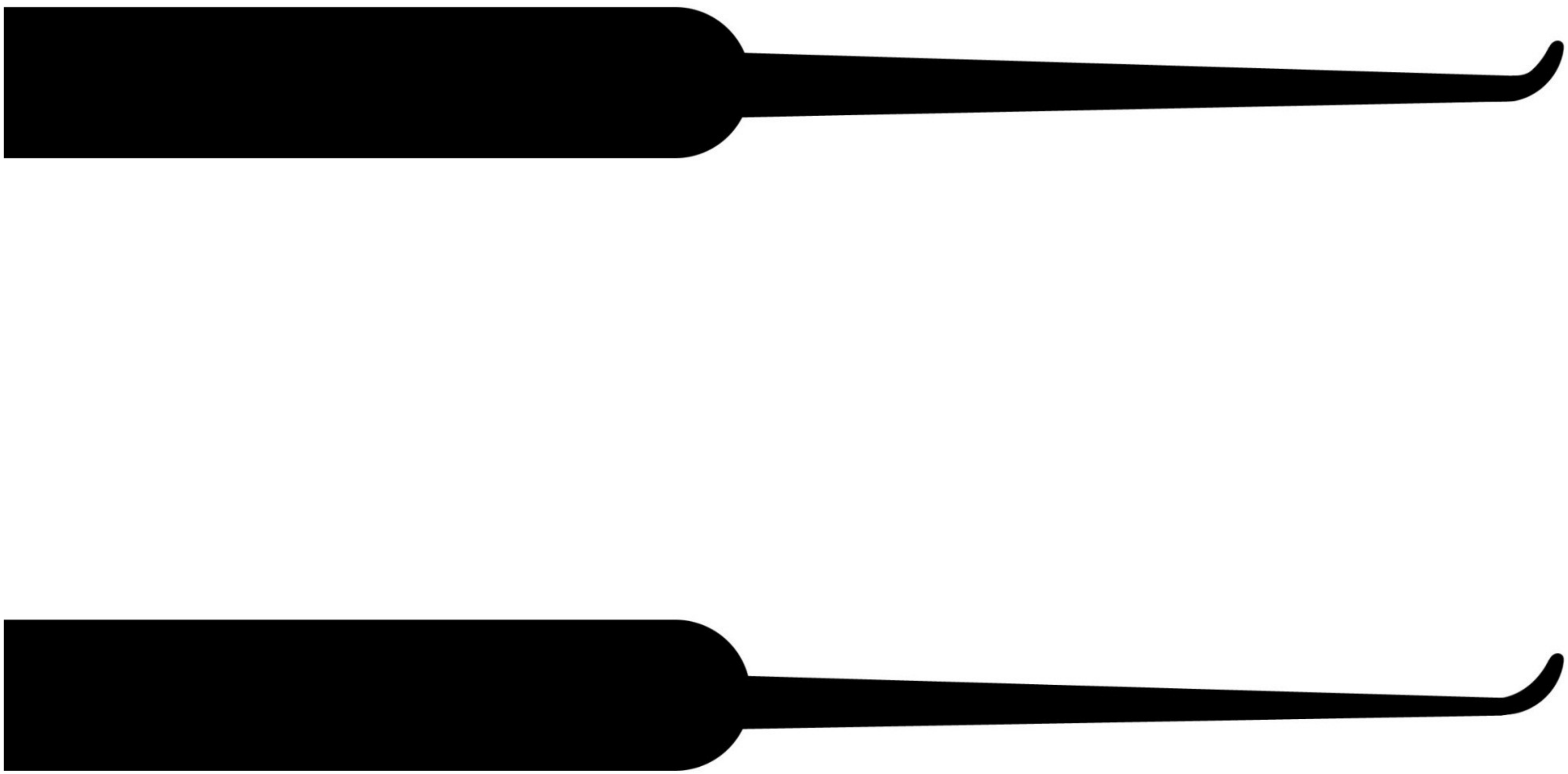
0.025" – original TOOOL kits

0.

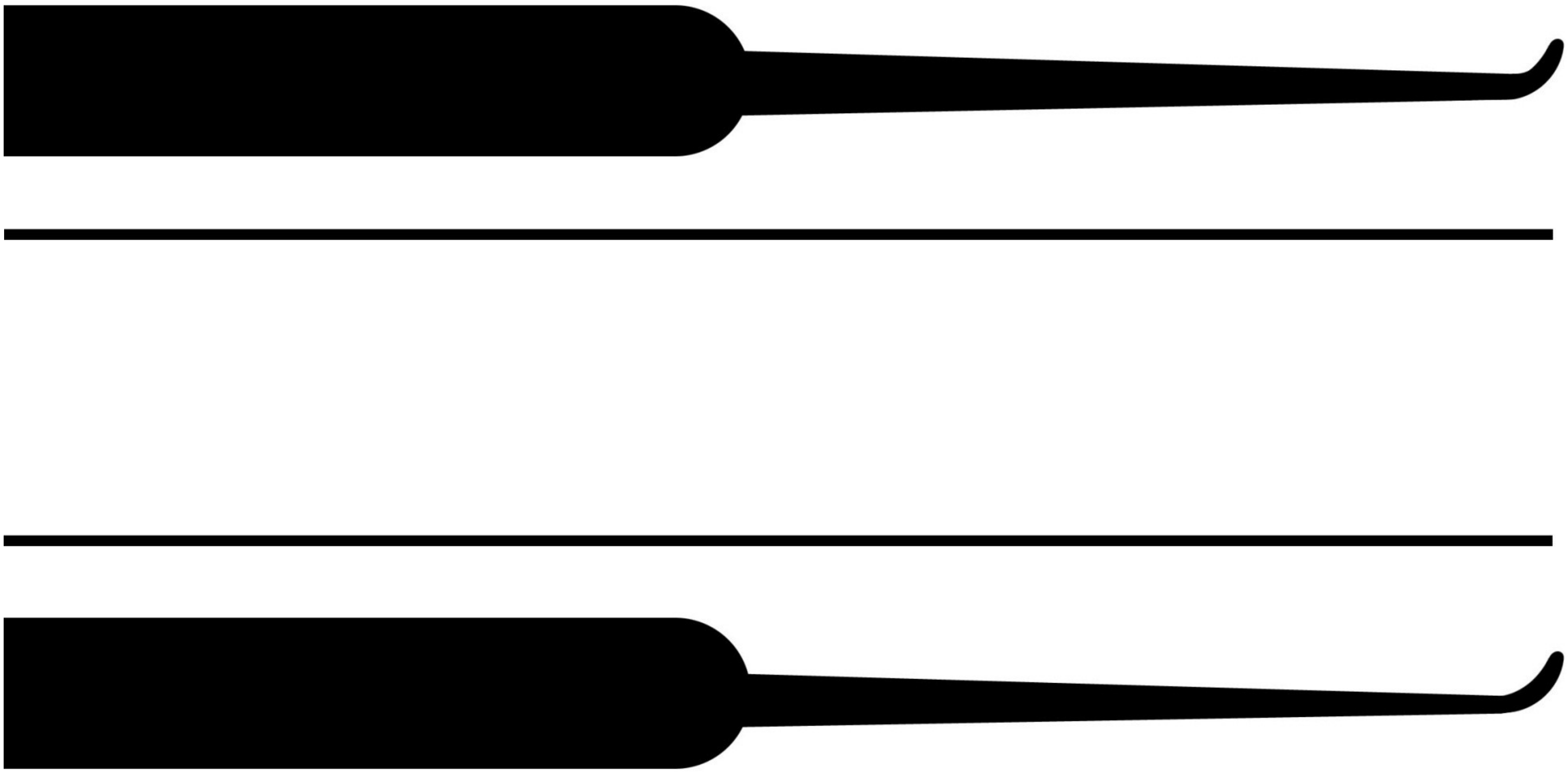
“Standard” vs. “Euro”



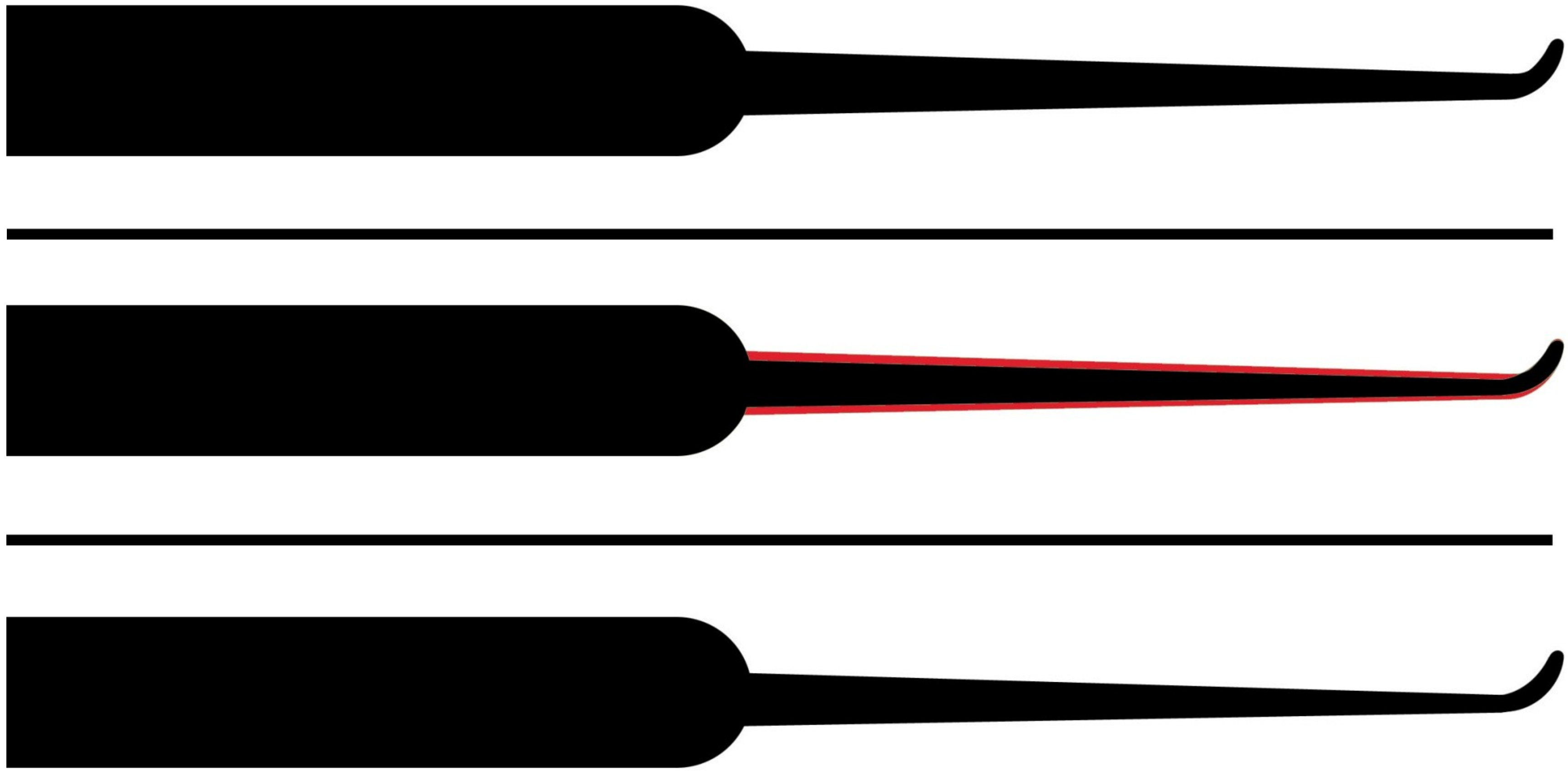
“Standard” vs. “Euro”



“Standard” vs. “Euro”

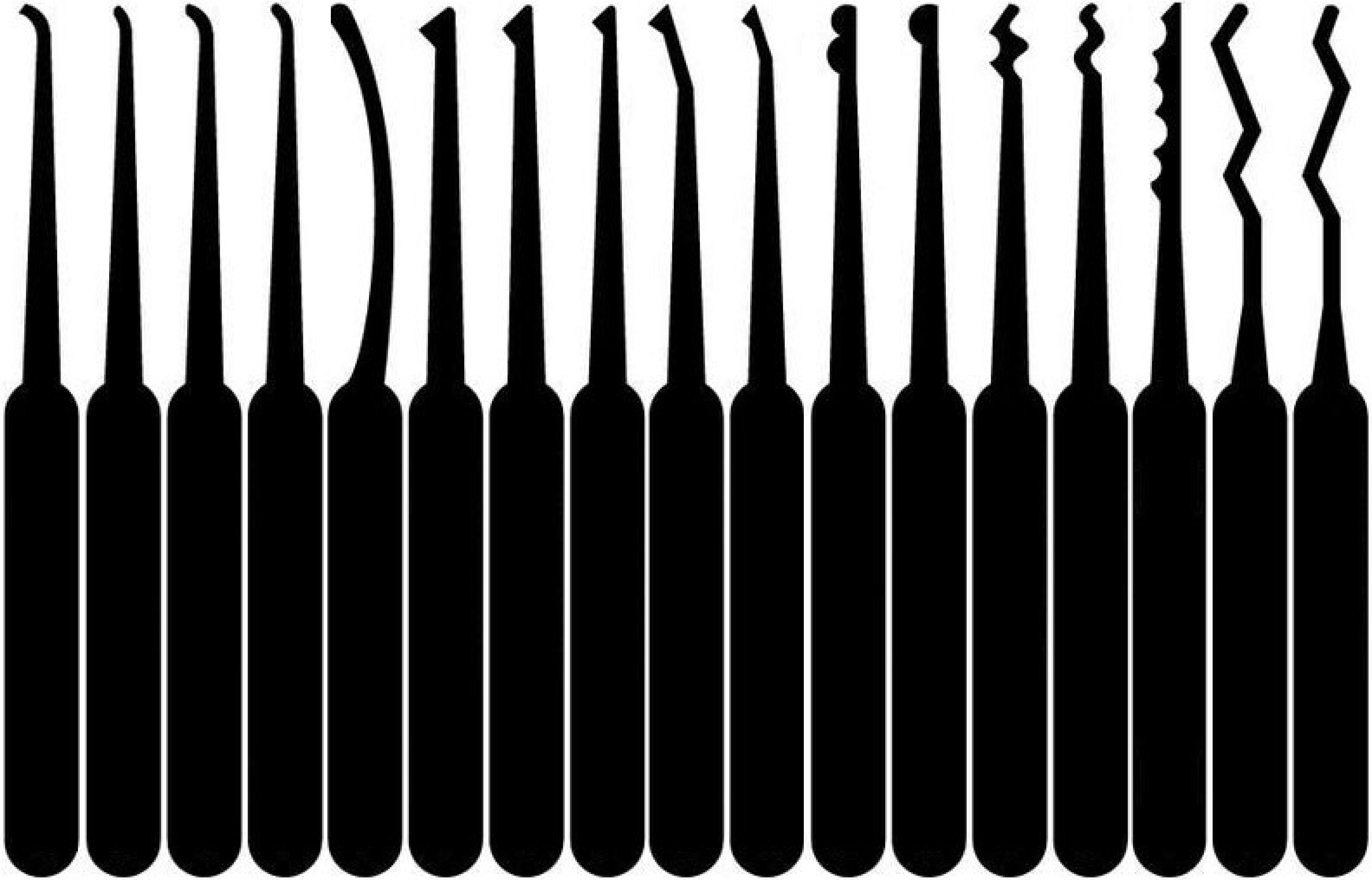


“Standard” vs. “Euro”

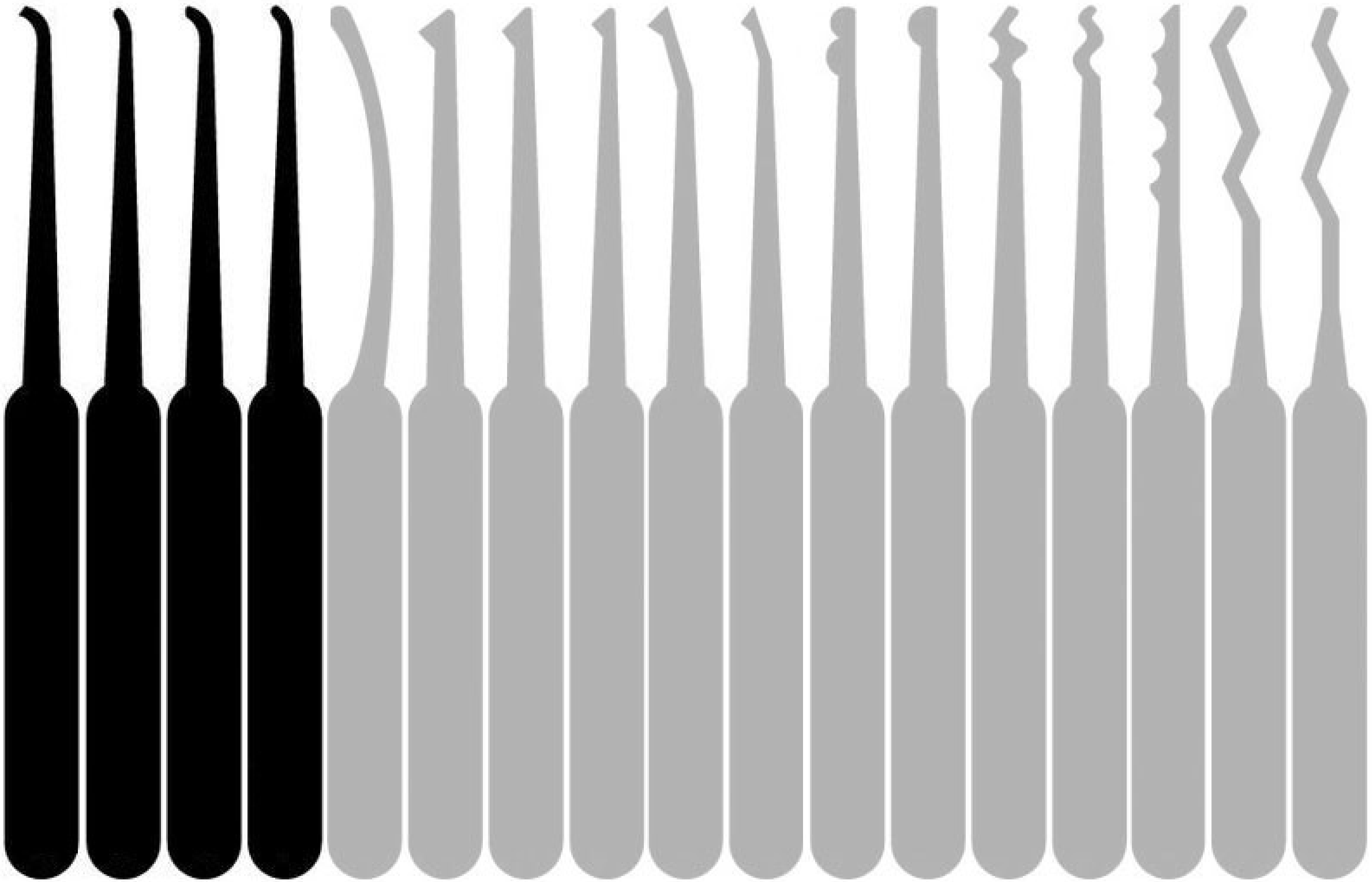


The *real* confusing mess…

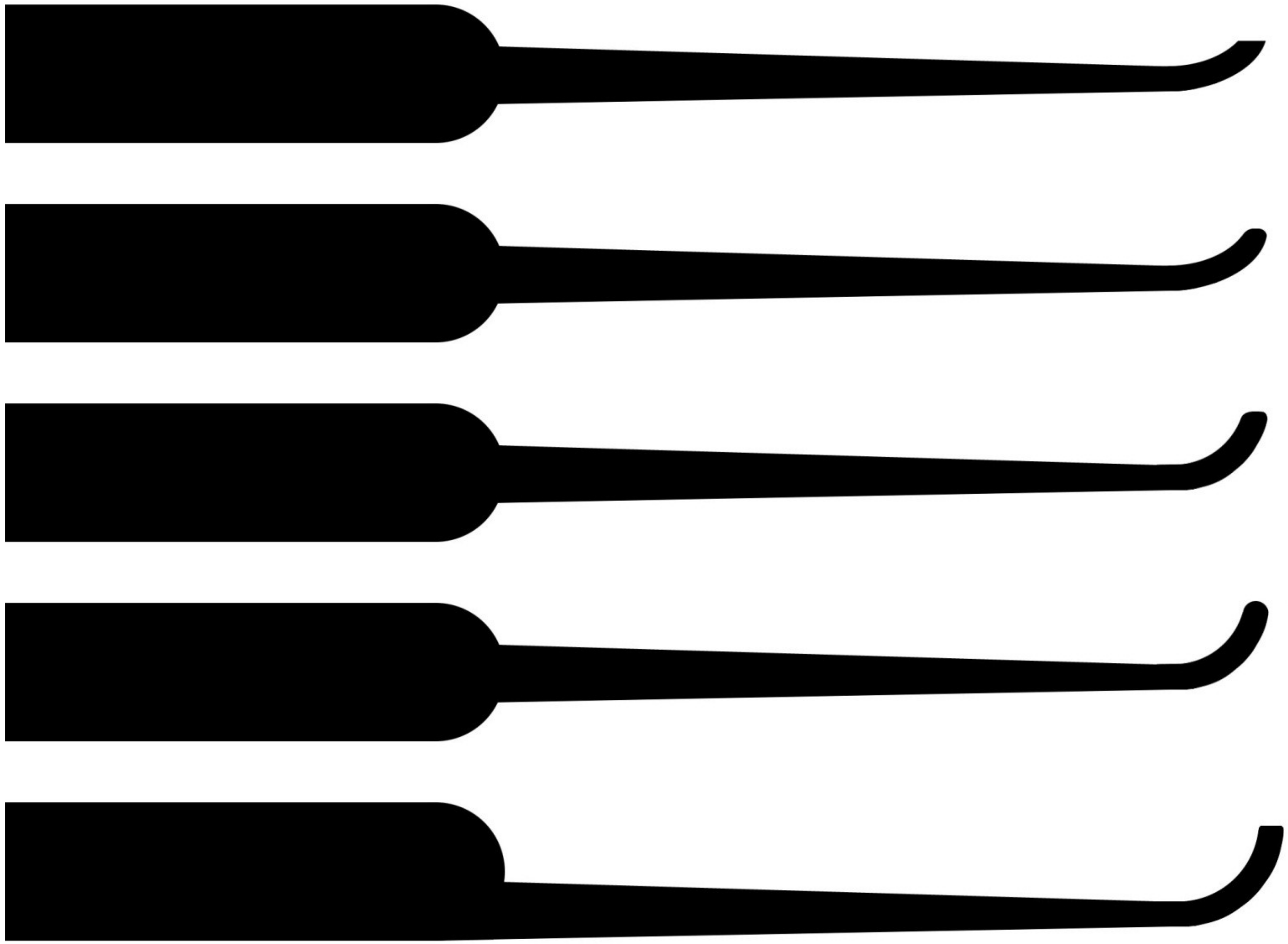
Categories & Names



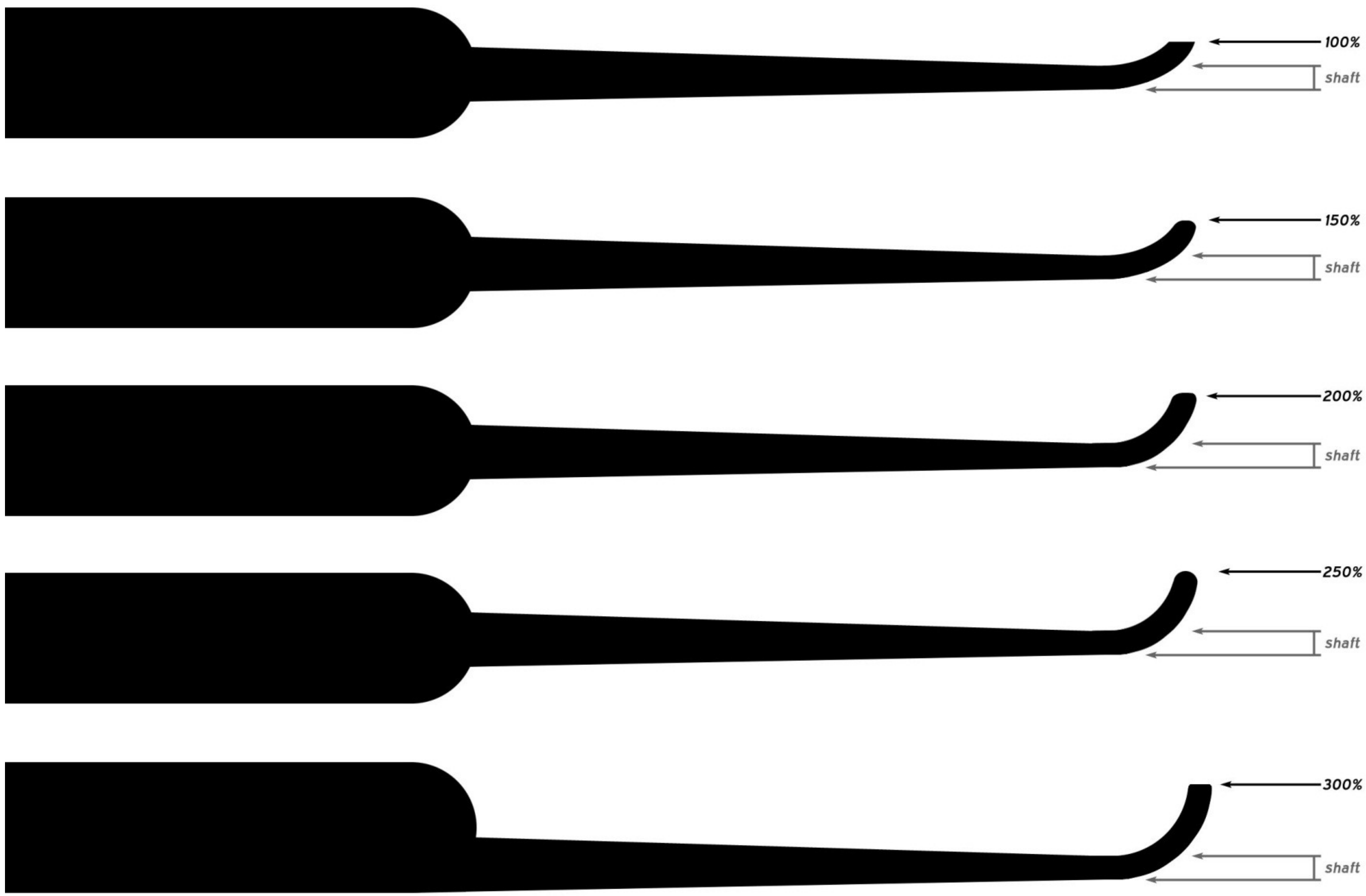
What would you call these?



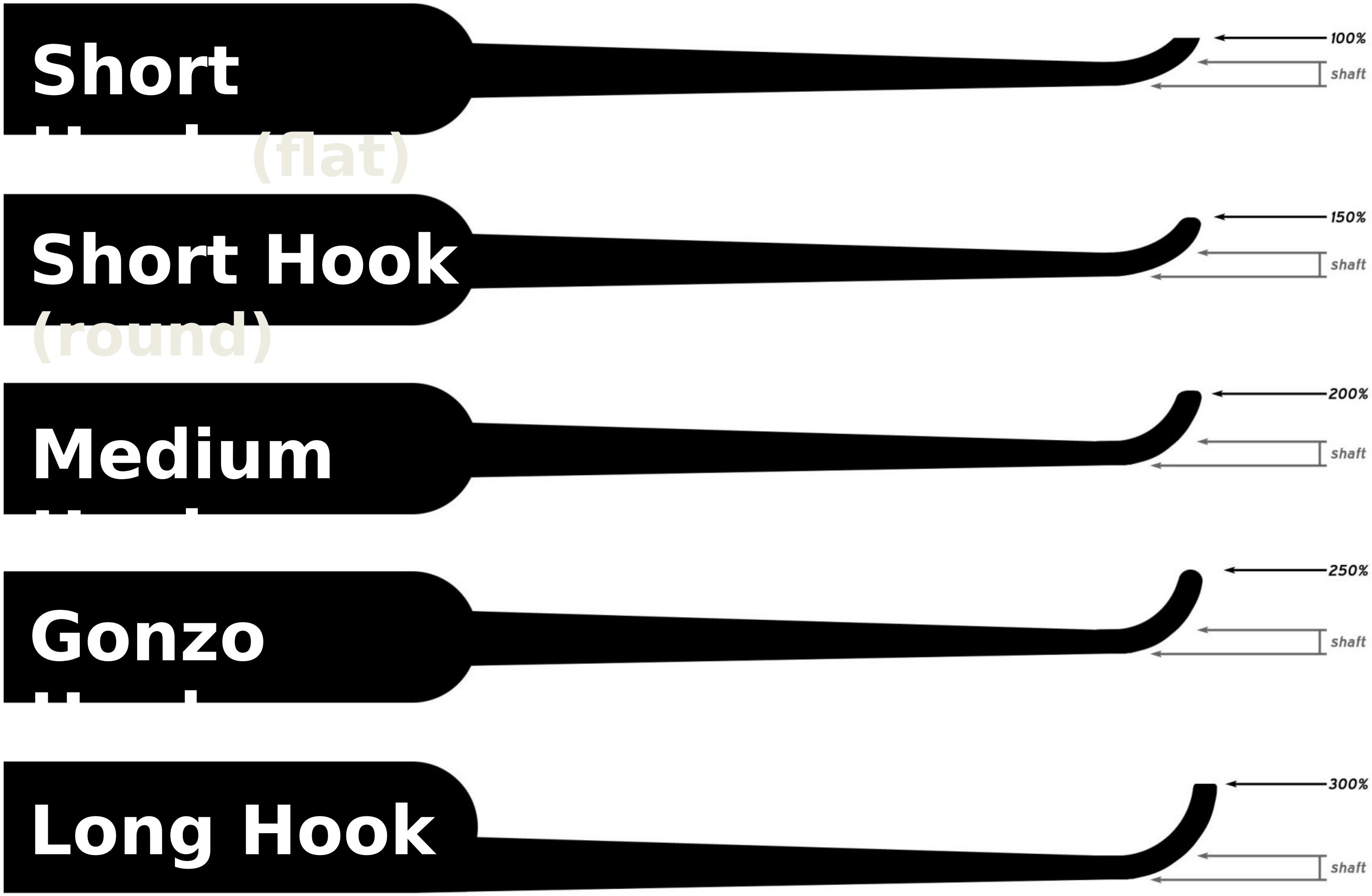
Hooks (a.k.a. Lifters)



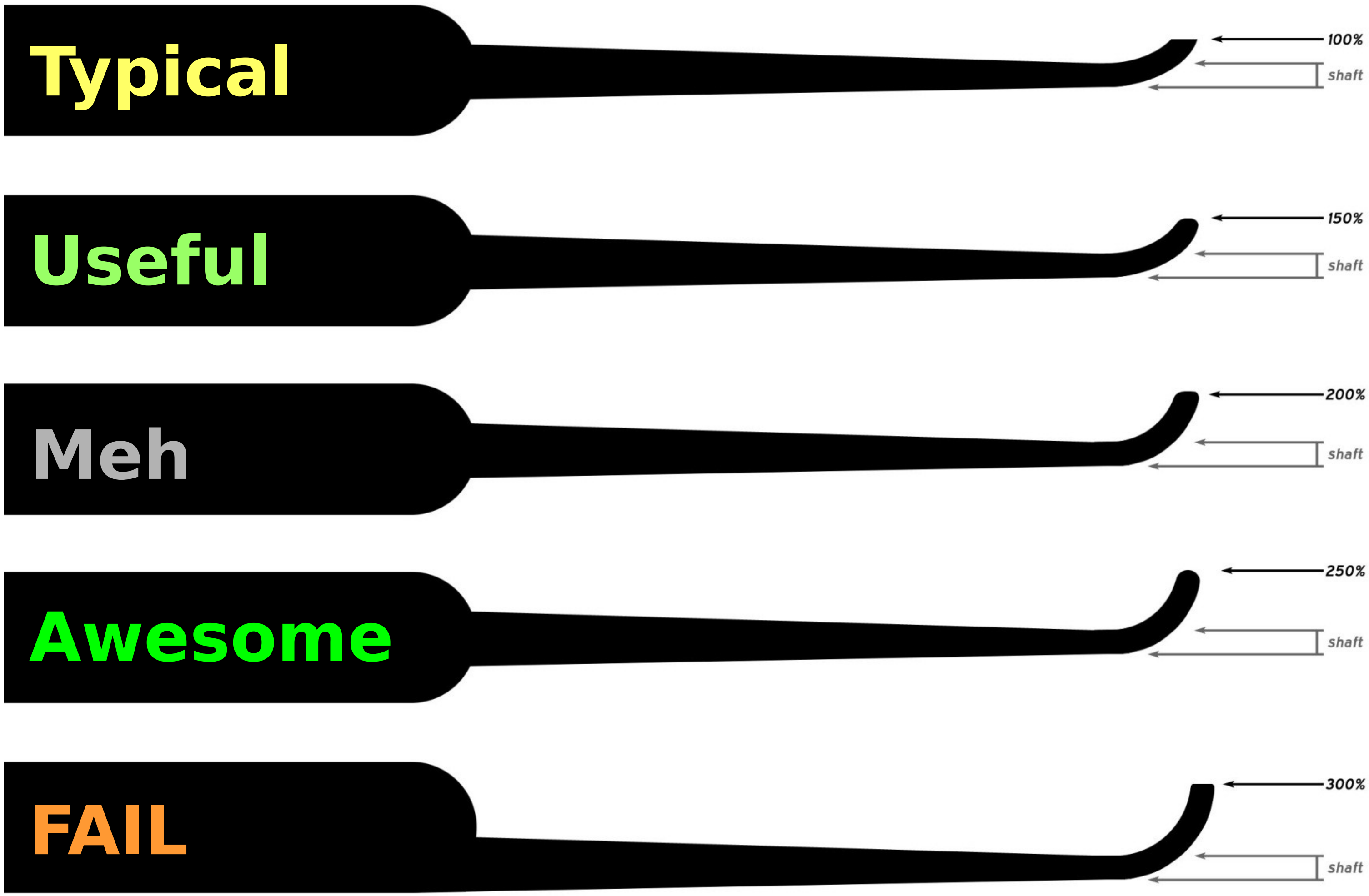
Hooks (a.k.a. Lifters)



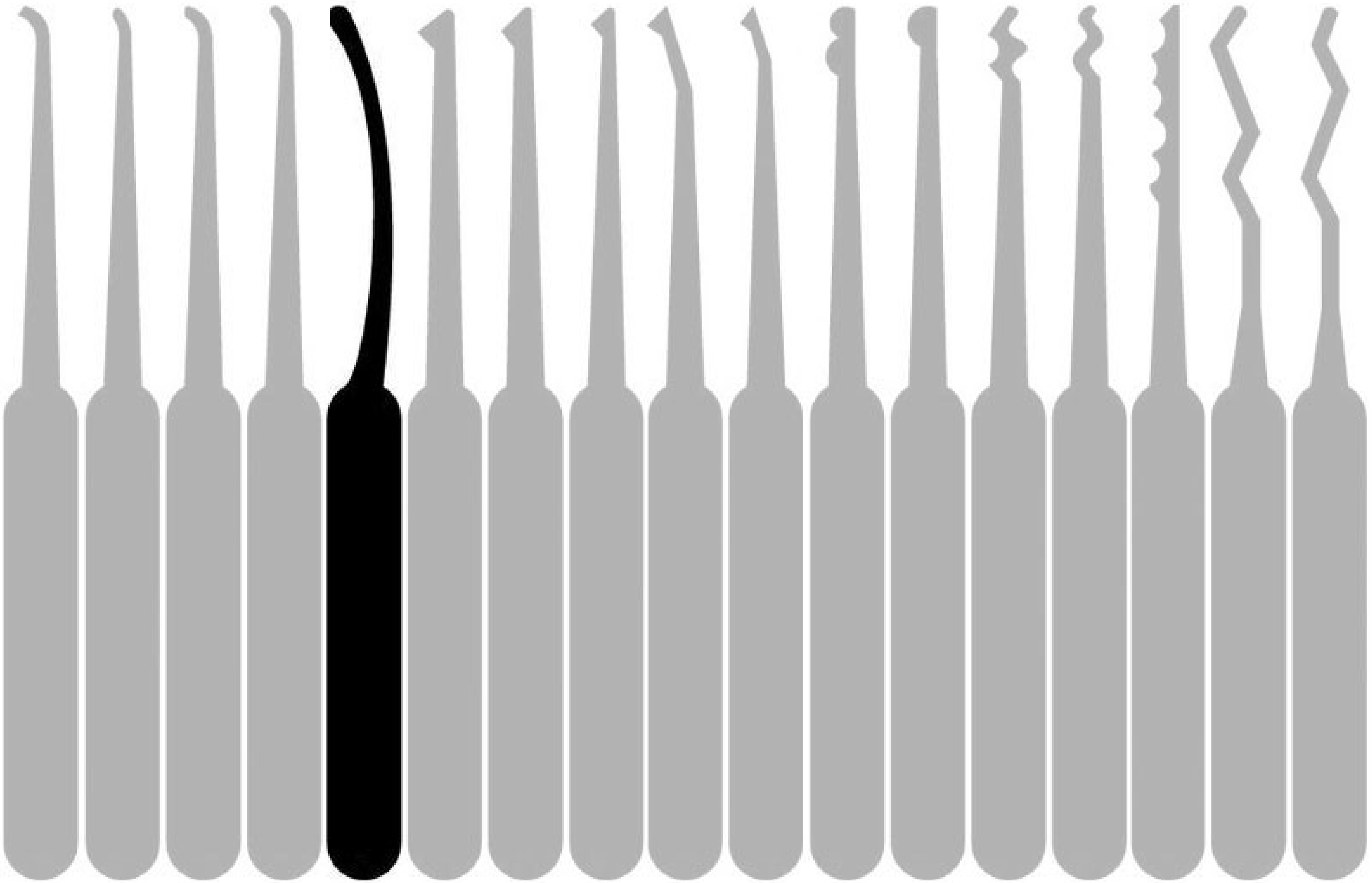
Hooks (a.k.a. Lifters)



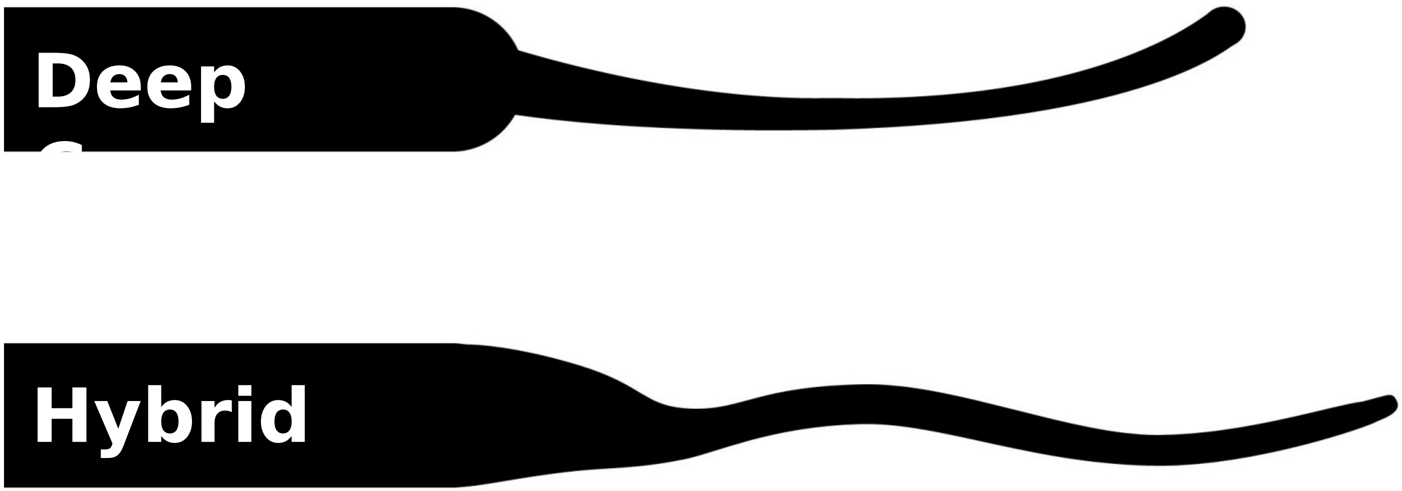
Hooks (a.k.a. Lifters)



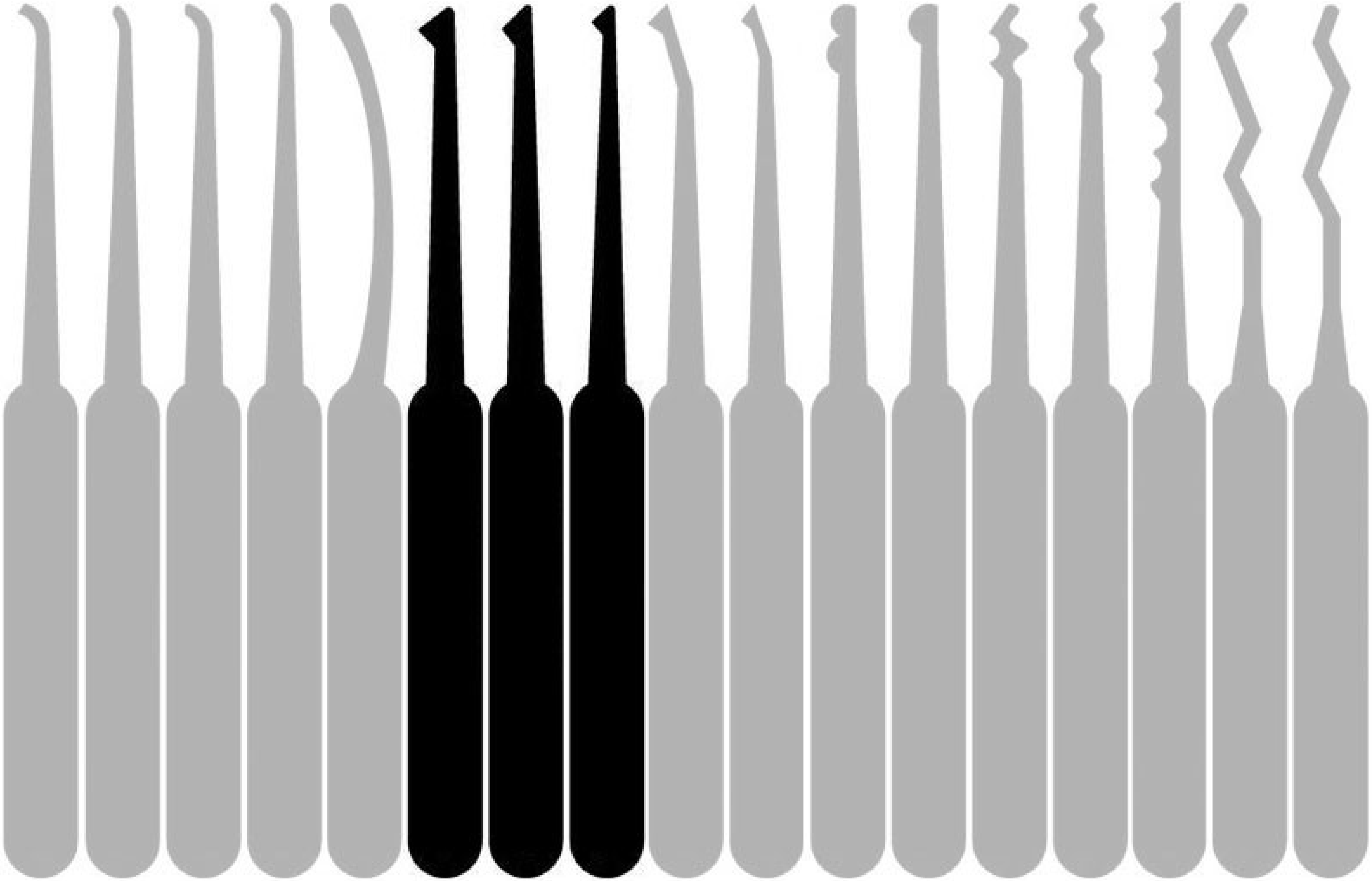
What would you call these?



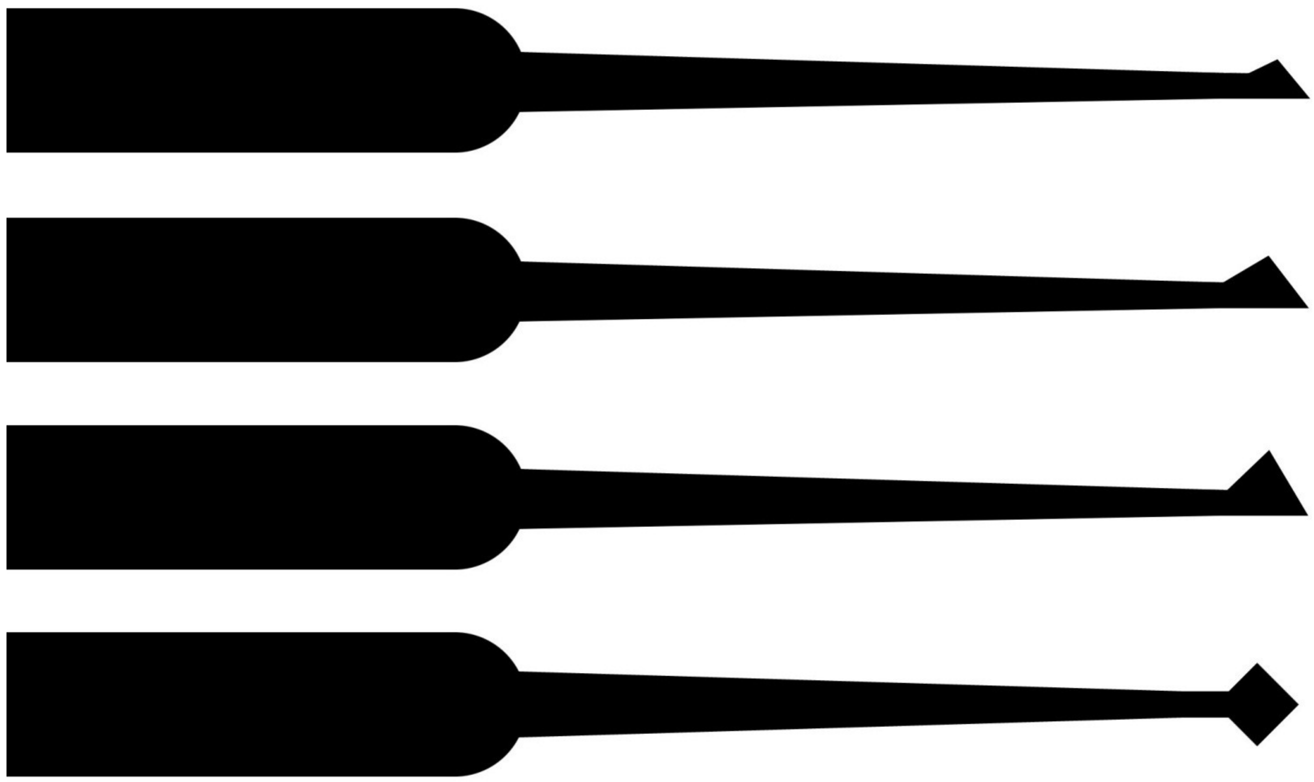
Reach Tools



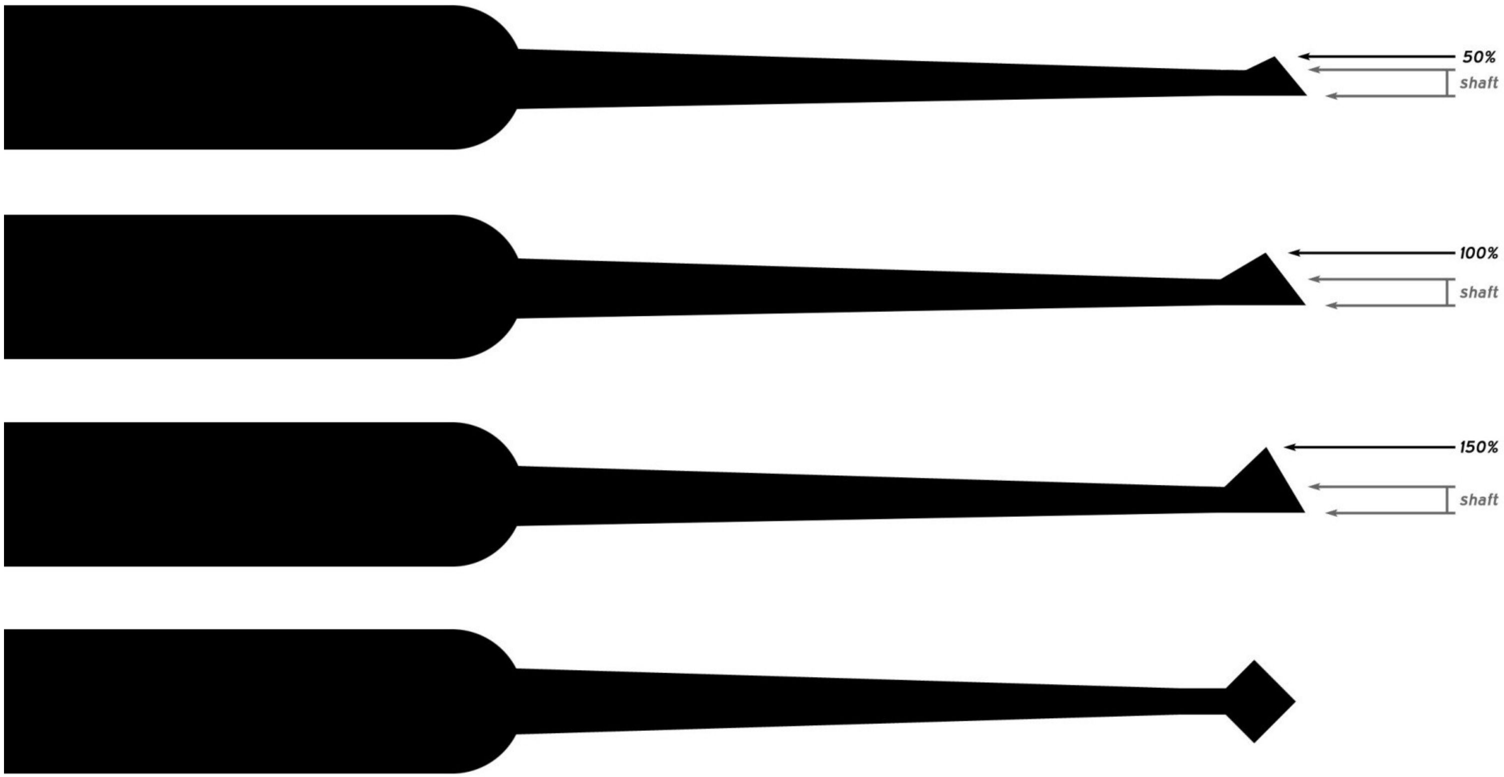
You've all seen these…



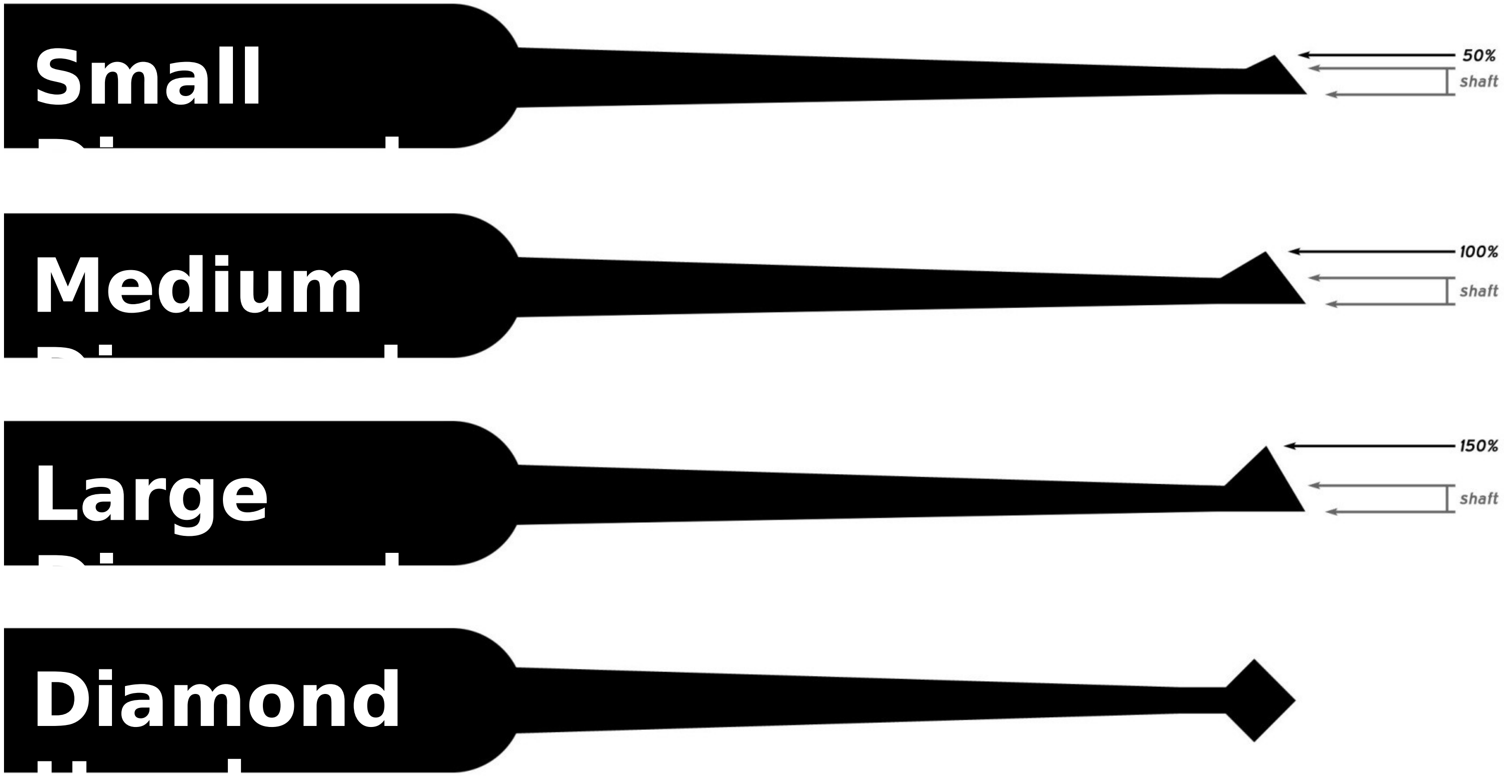
Diamonds



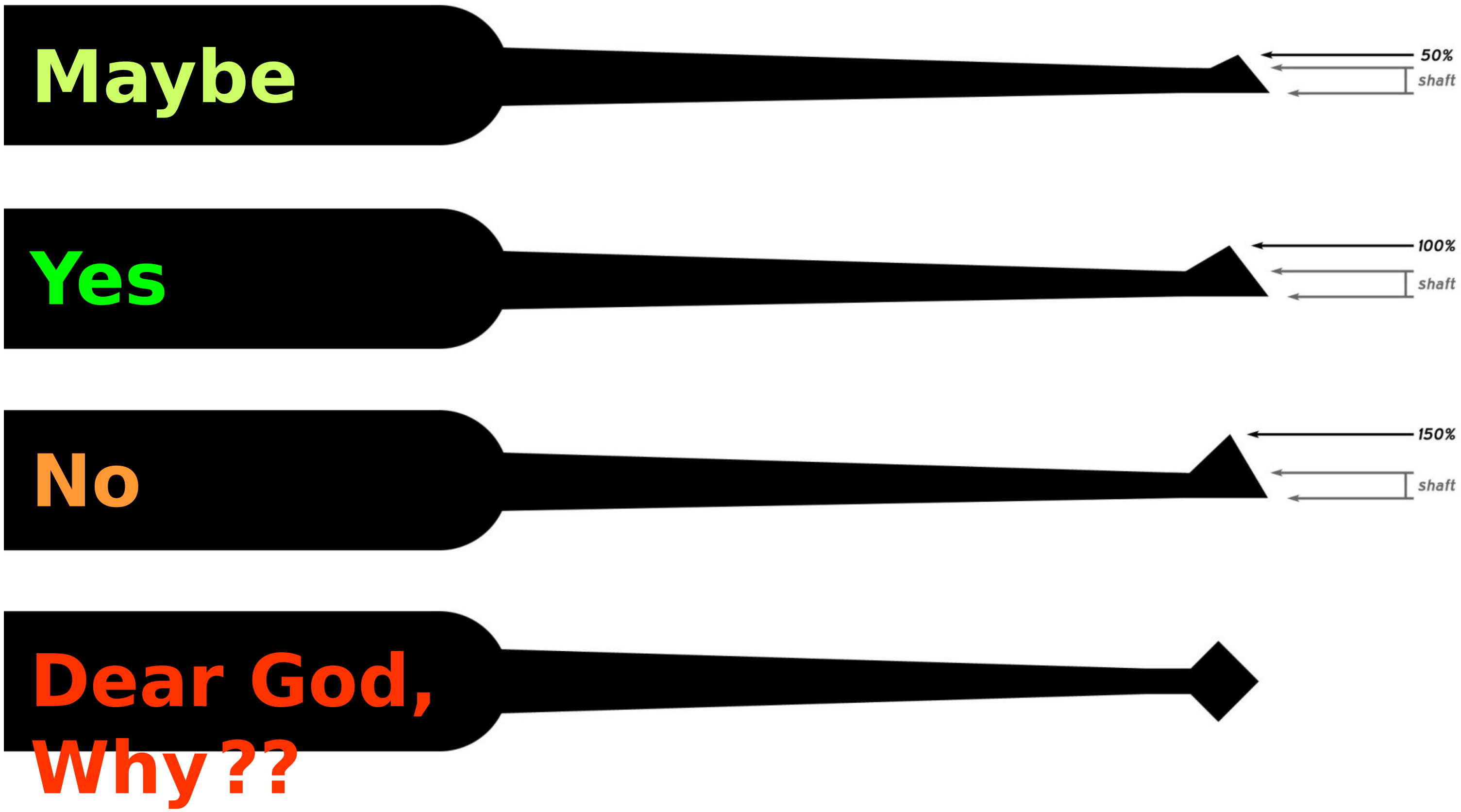
Diamonds



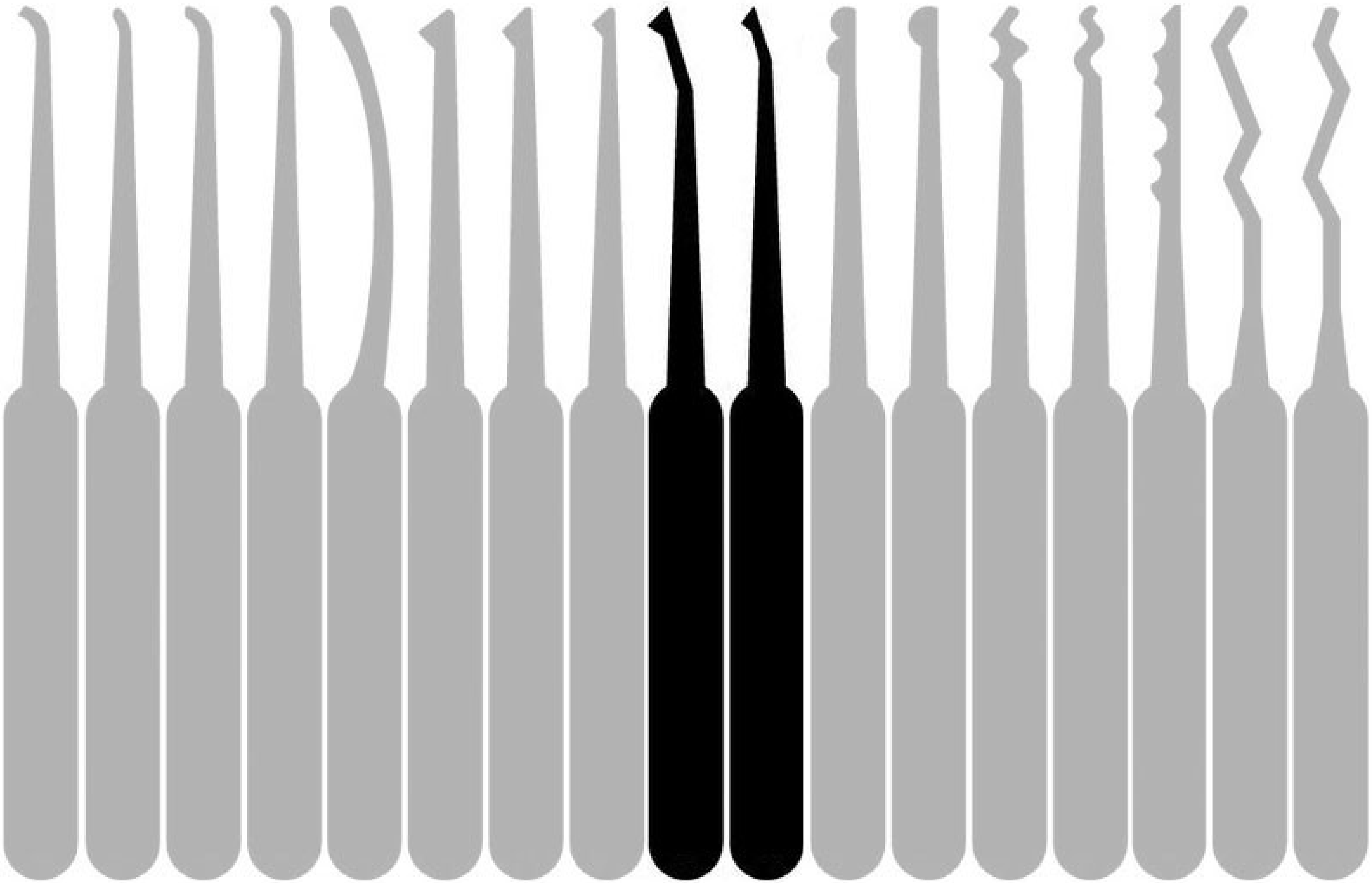
Diamonds



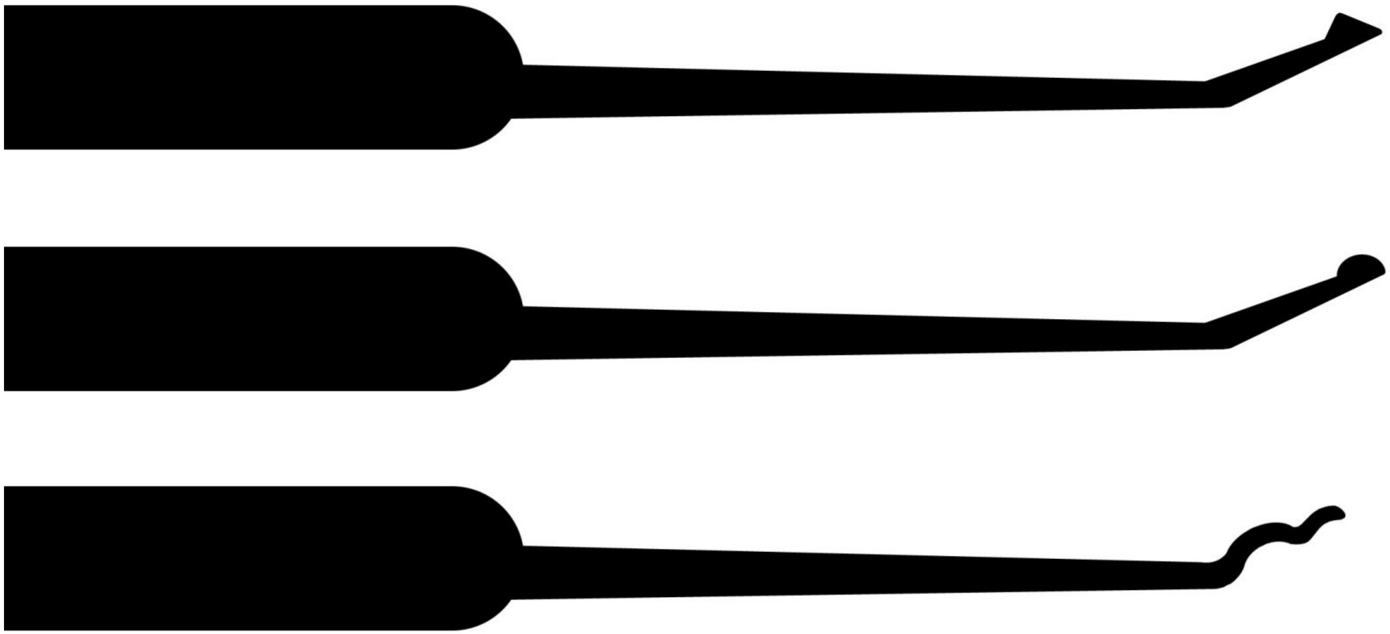
Diamonds



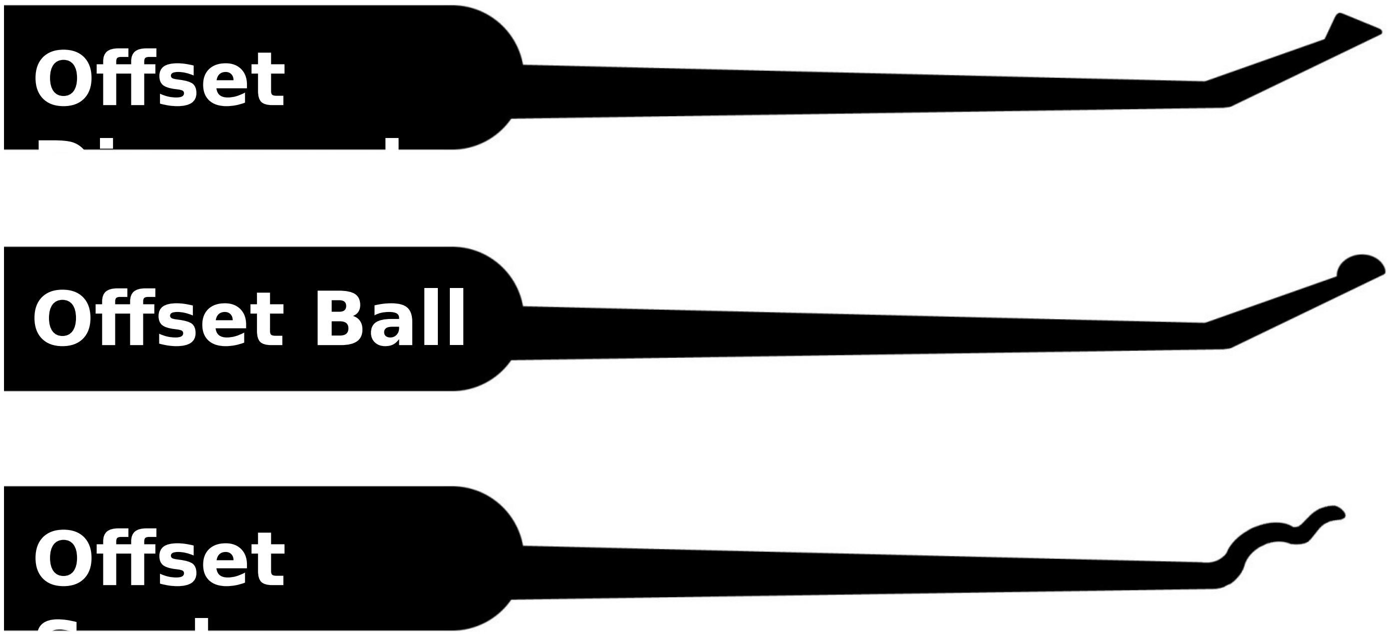
How would you categorize *these*...?



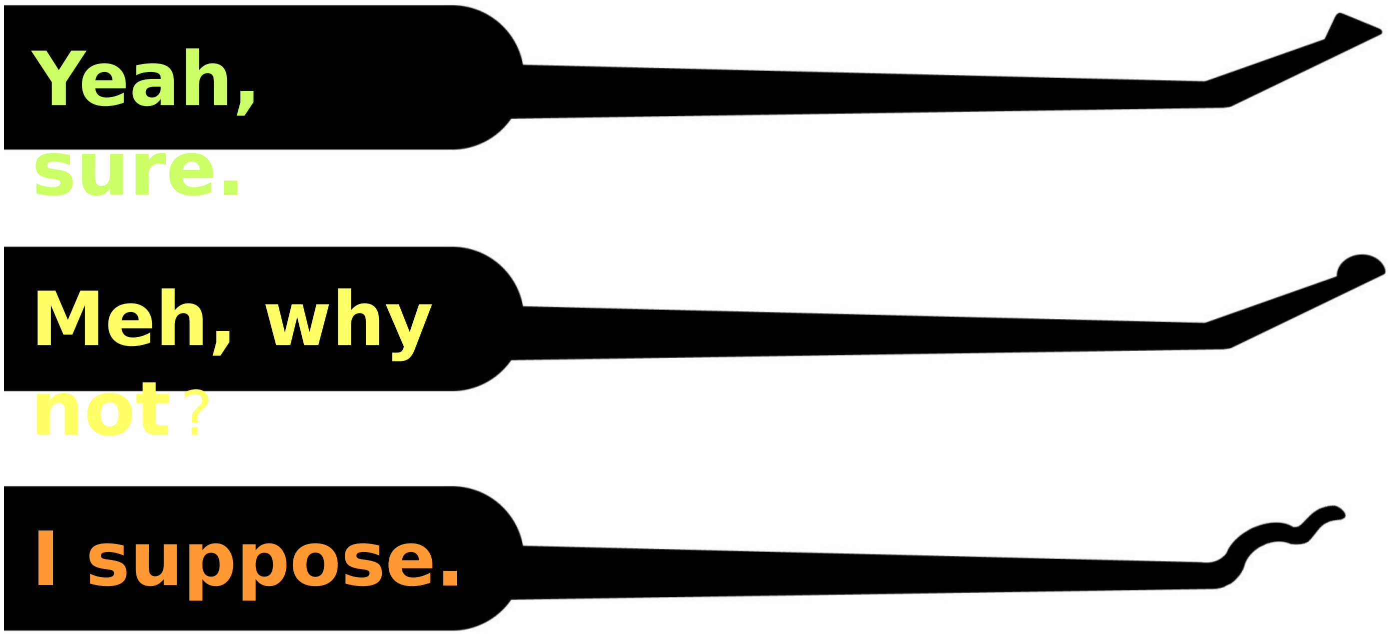
Offset Tools



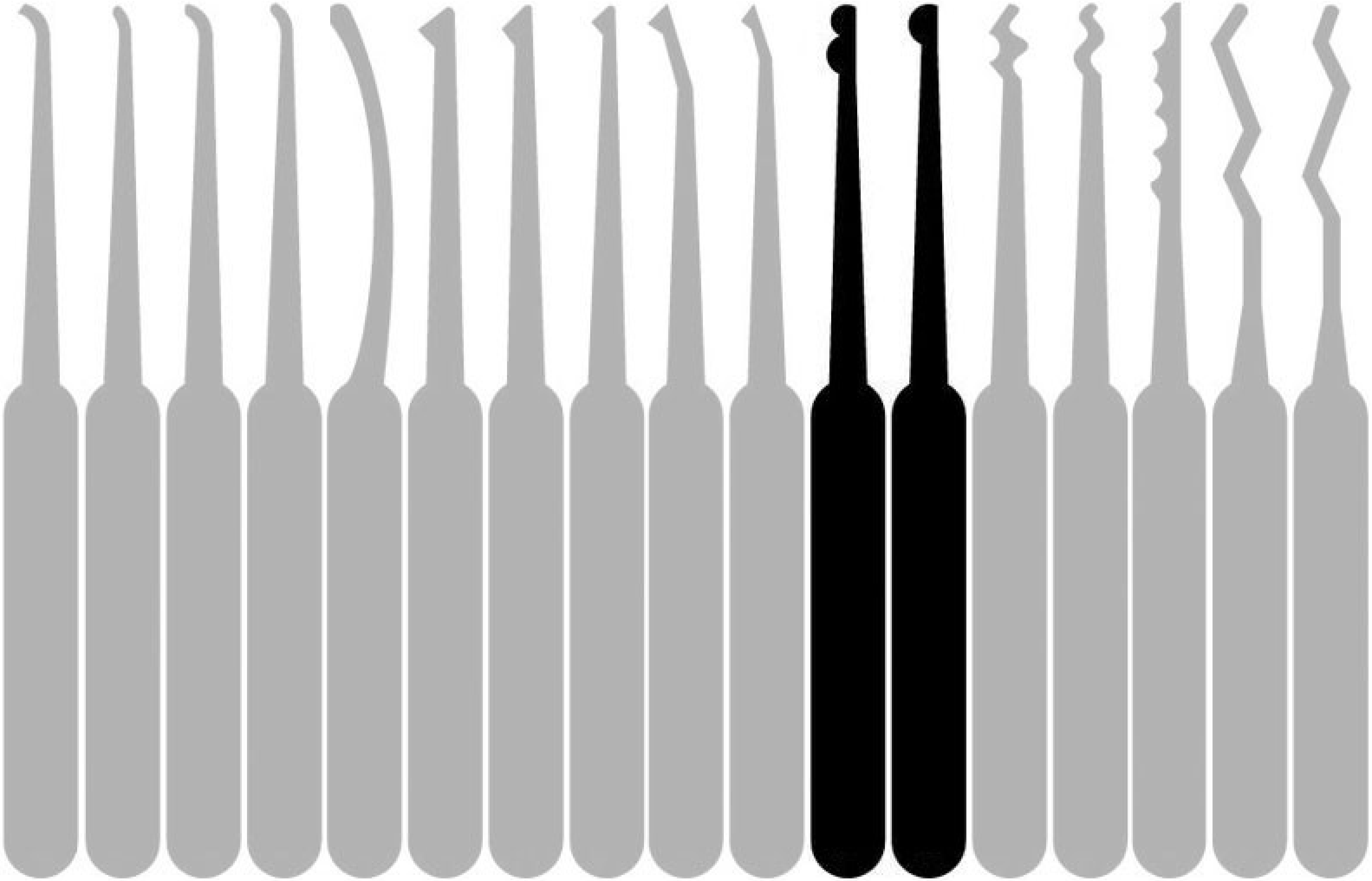
Offset Tools



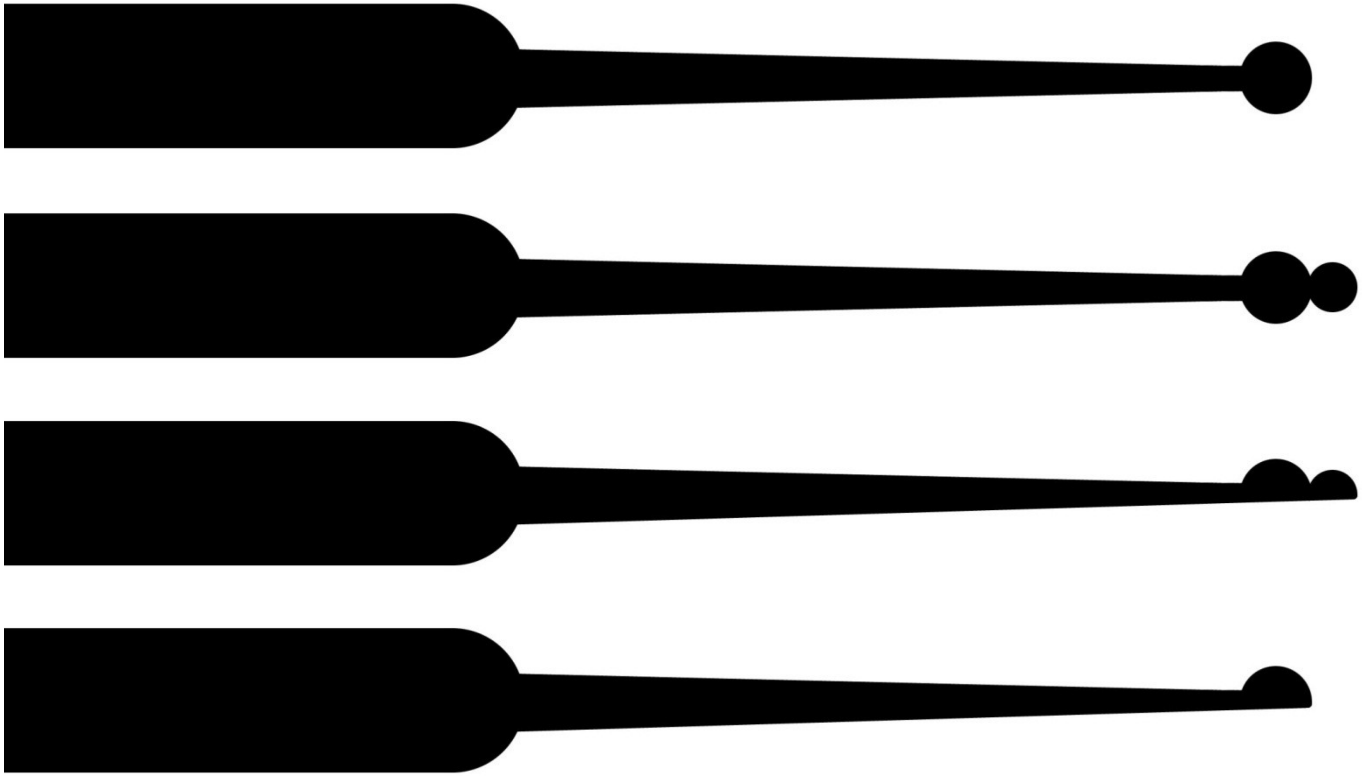
Offset Tools



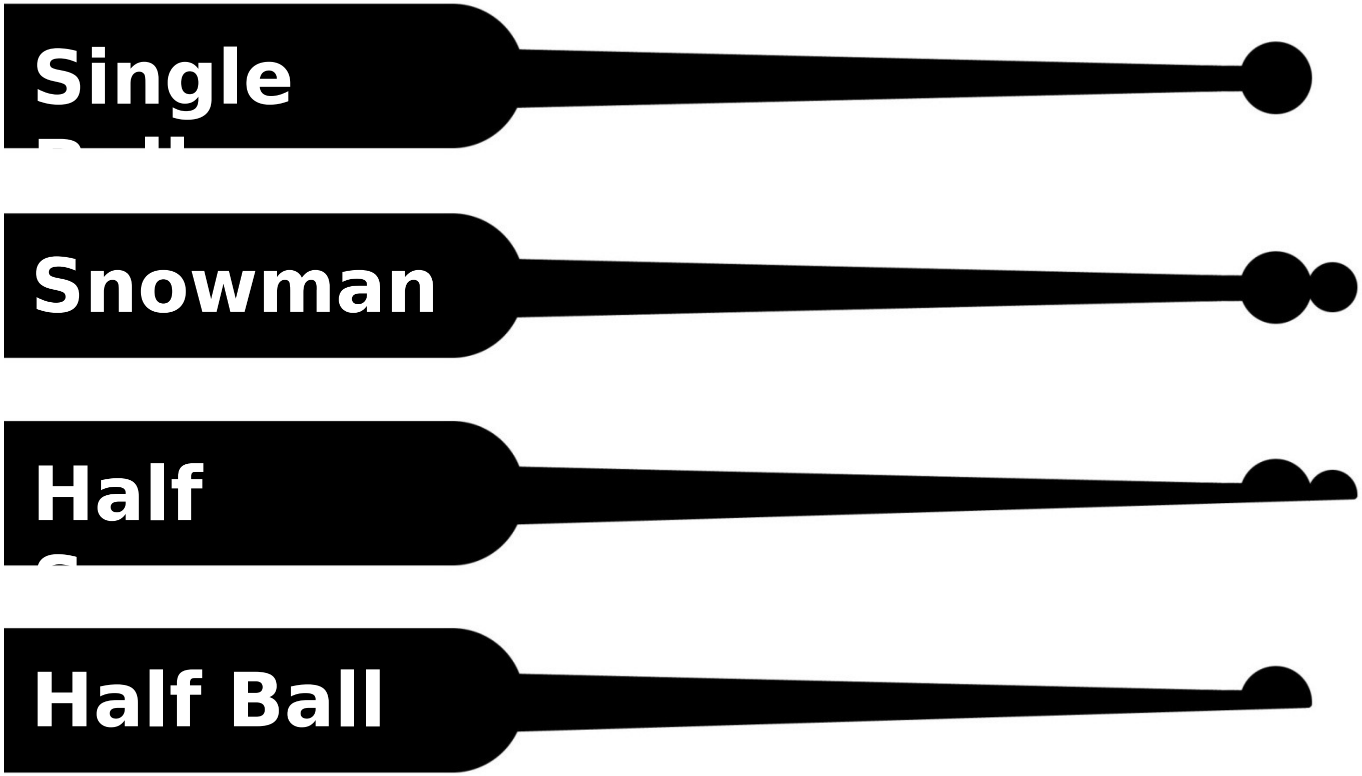
Balls, balls, balls...



Balls, balls, balls...



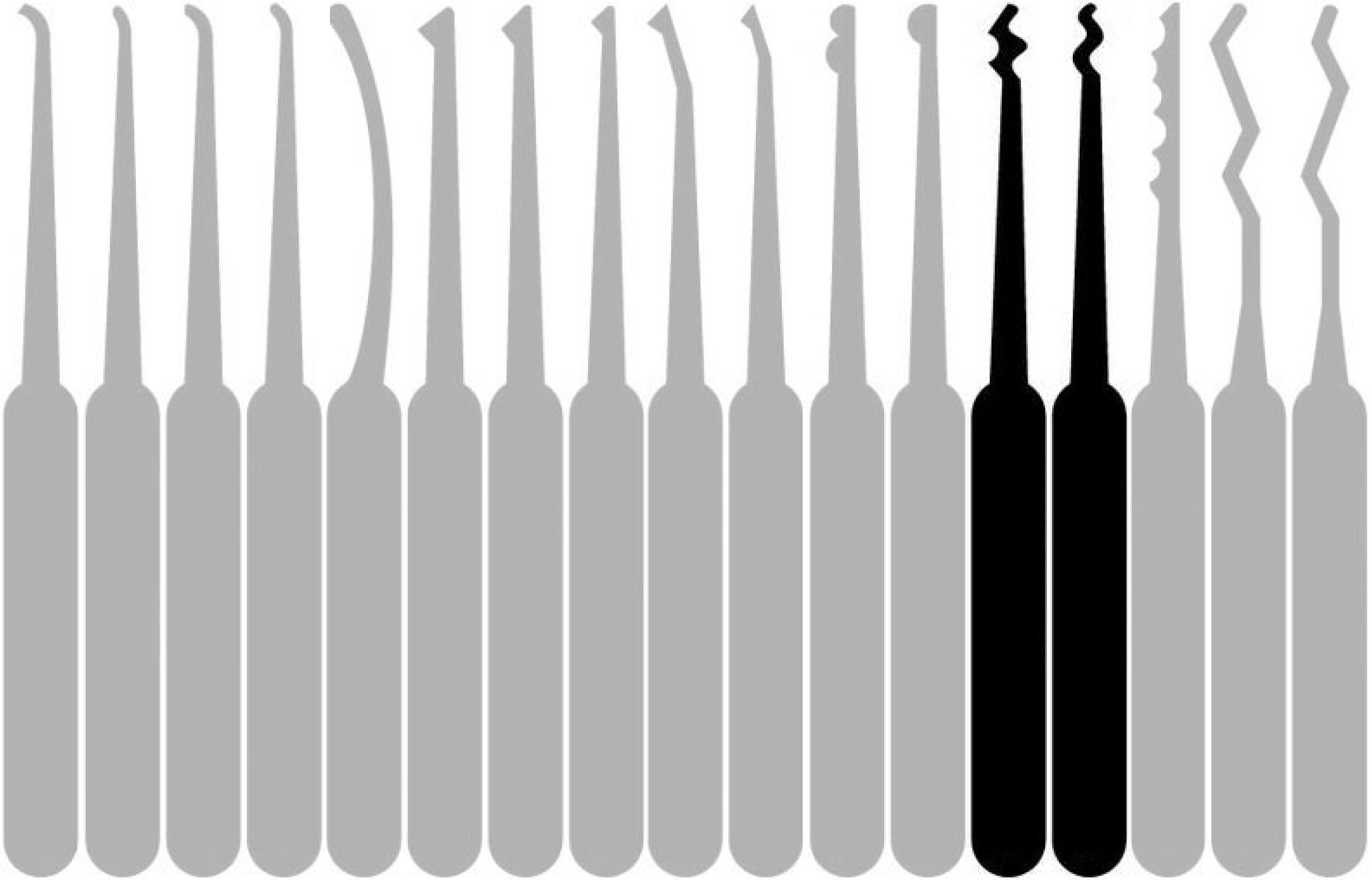
Balls, balls, balls...



Balls, balls, balls…



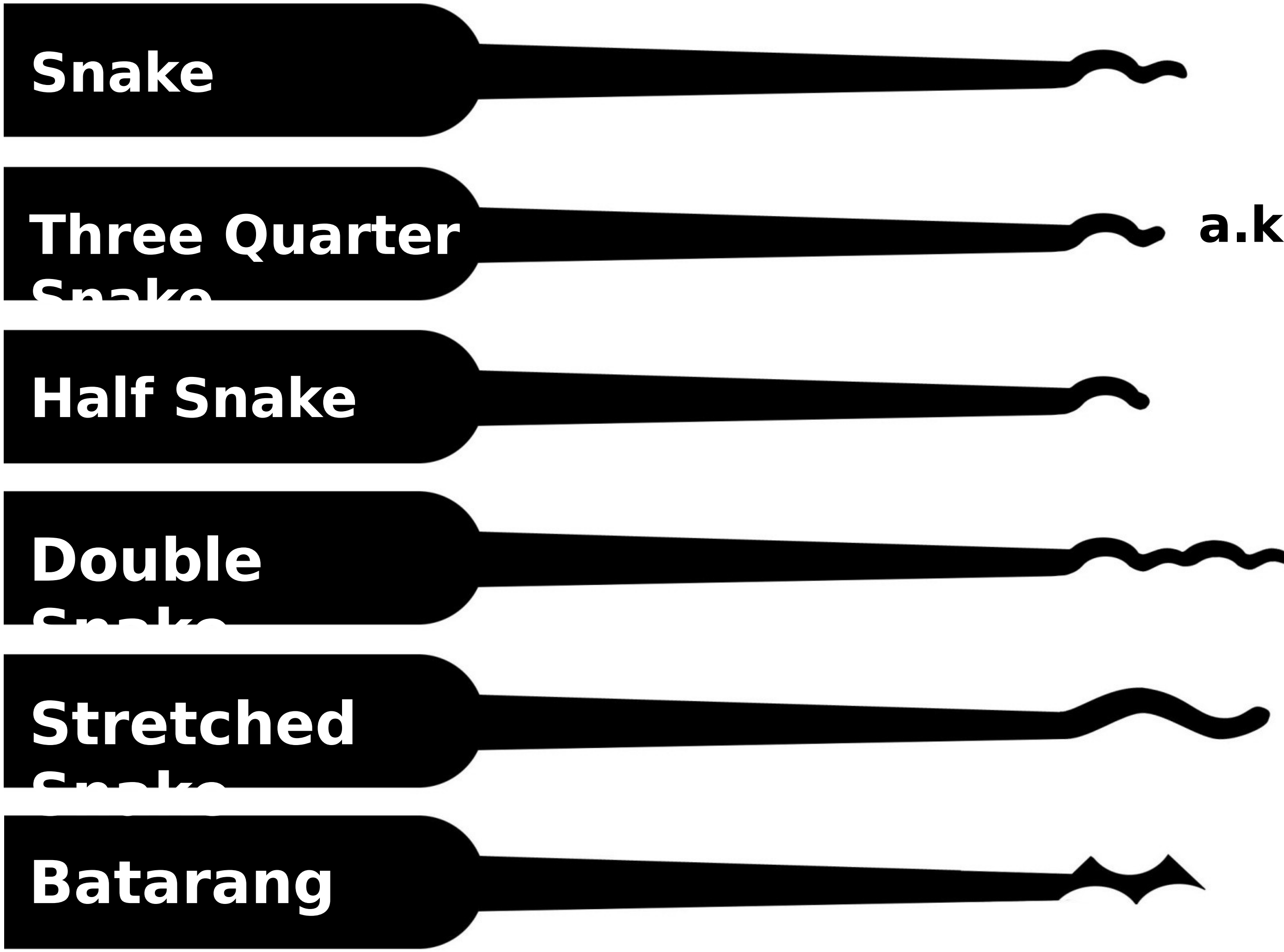
What would you call these?



Raking tools... Welcome to Crazy Land



Raking Tools



a.k.a. C Rake, Double Rake

a.k.a. Rake-and-a-Half

a.k.a. Single Rake

a.k.a. Quad Rake

a.k.a. S Rake

a.k.a. S Rake, Camel Back

Raking Tools



a.k.a. C Rake, Double Rake

a.k.a. Rake-and-a-Half

a.k.a. Single Rake

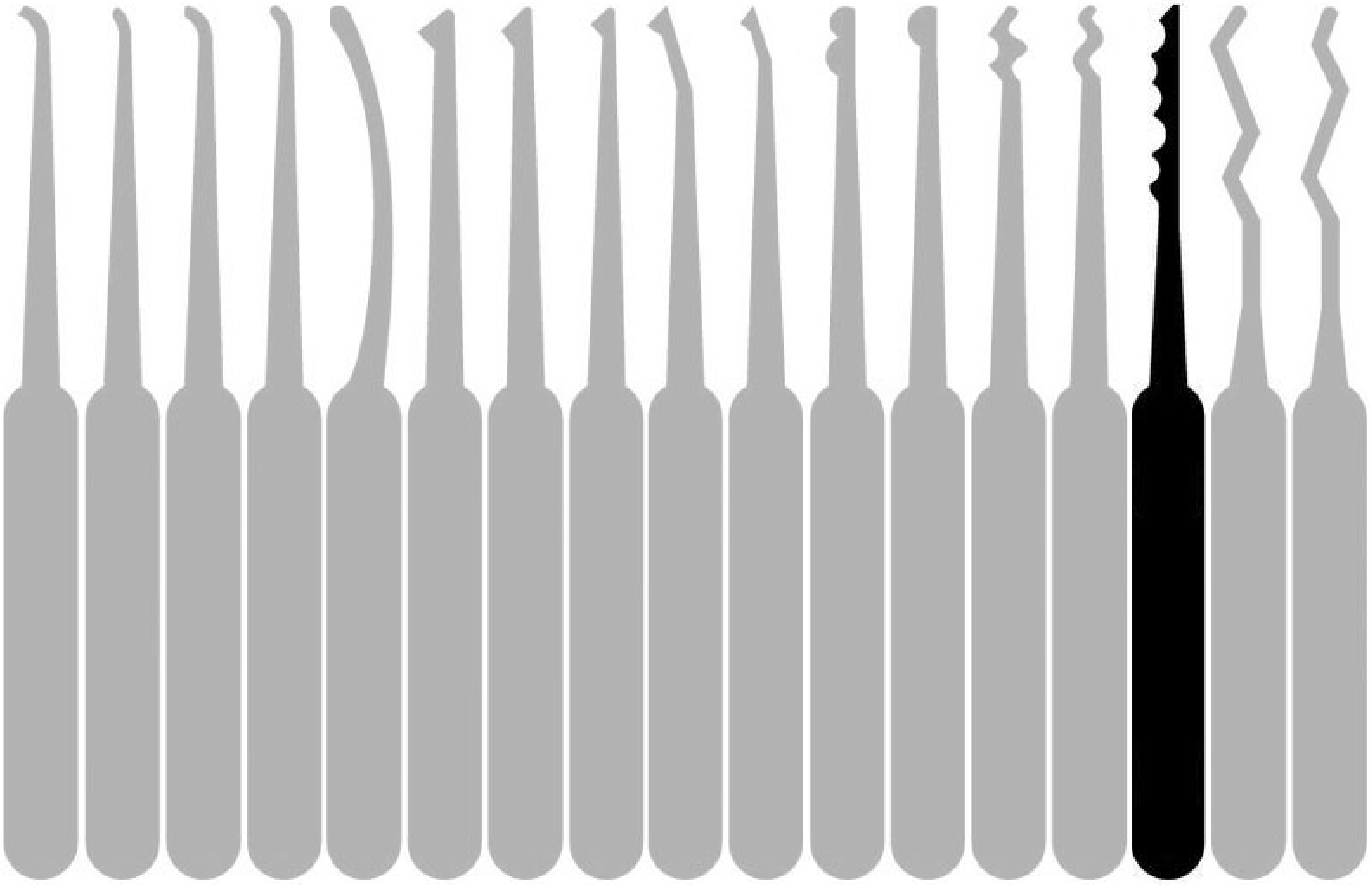
a.k.a. Quad Rake

a.k.a. S Rake

a.k.a. S Rake, Camel Back

Dangerous Weakness

What about something like *this*…

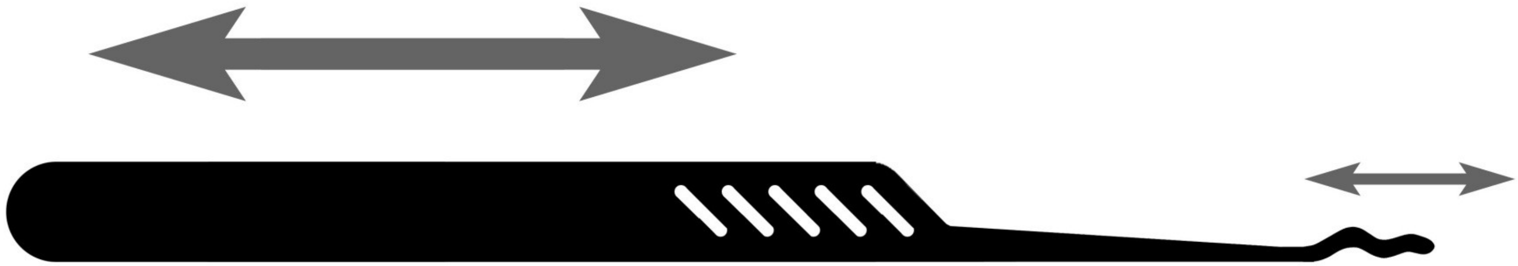


“Raking” vs. “Lifting”

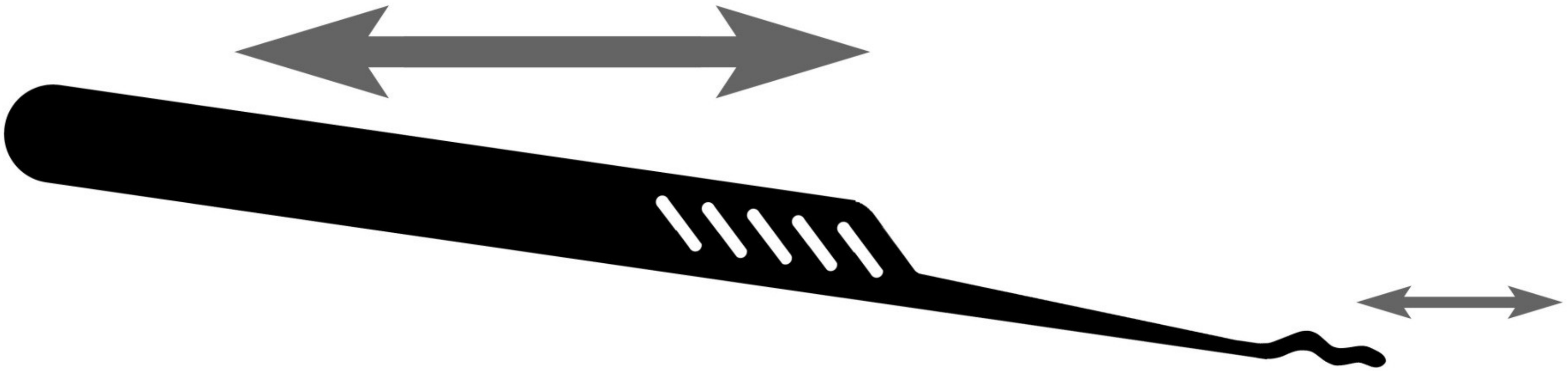




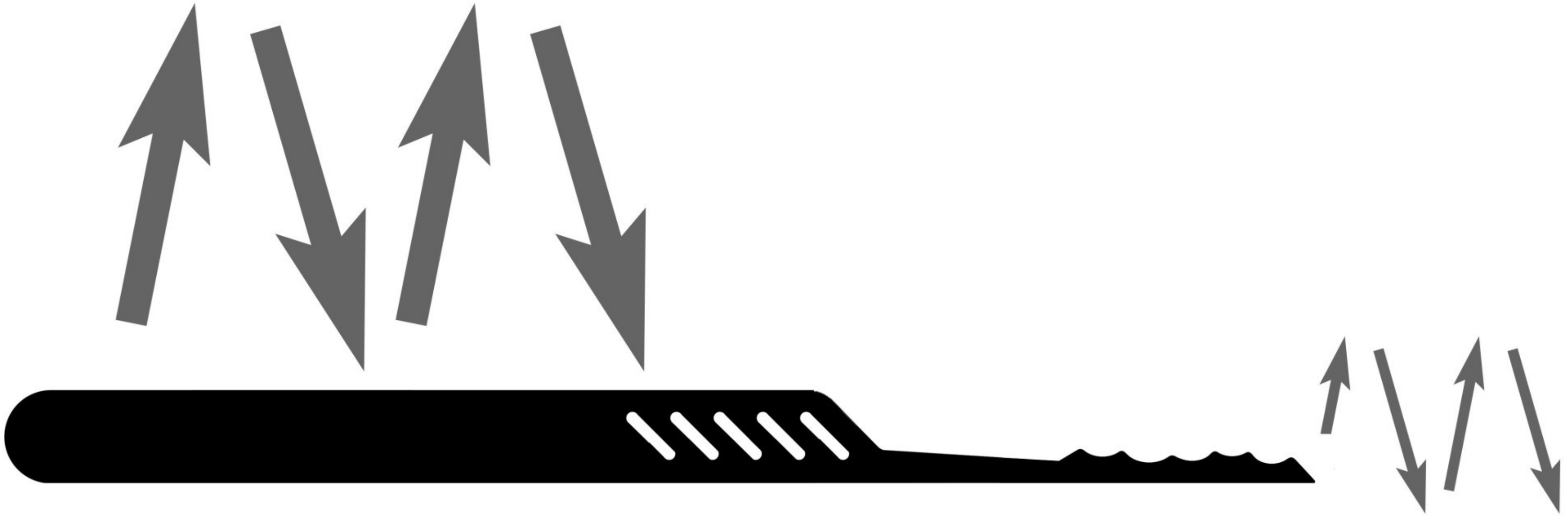
Raking



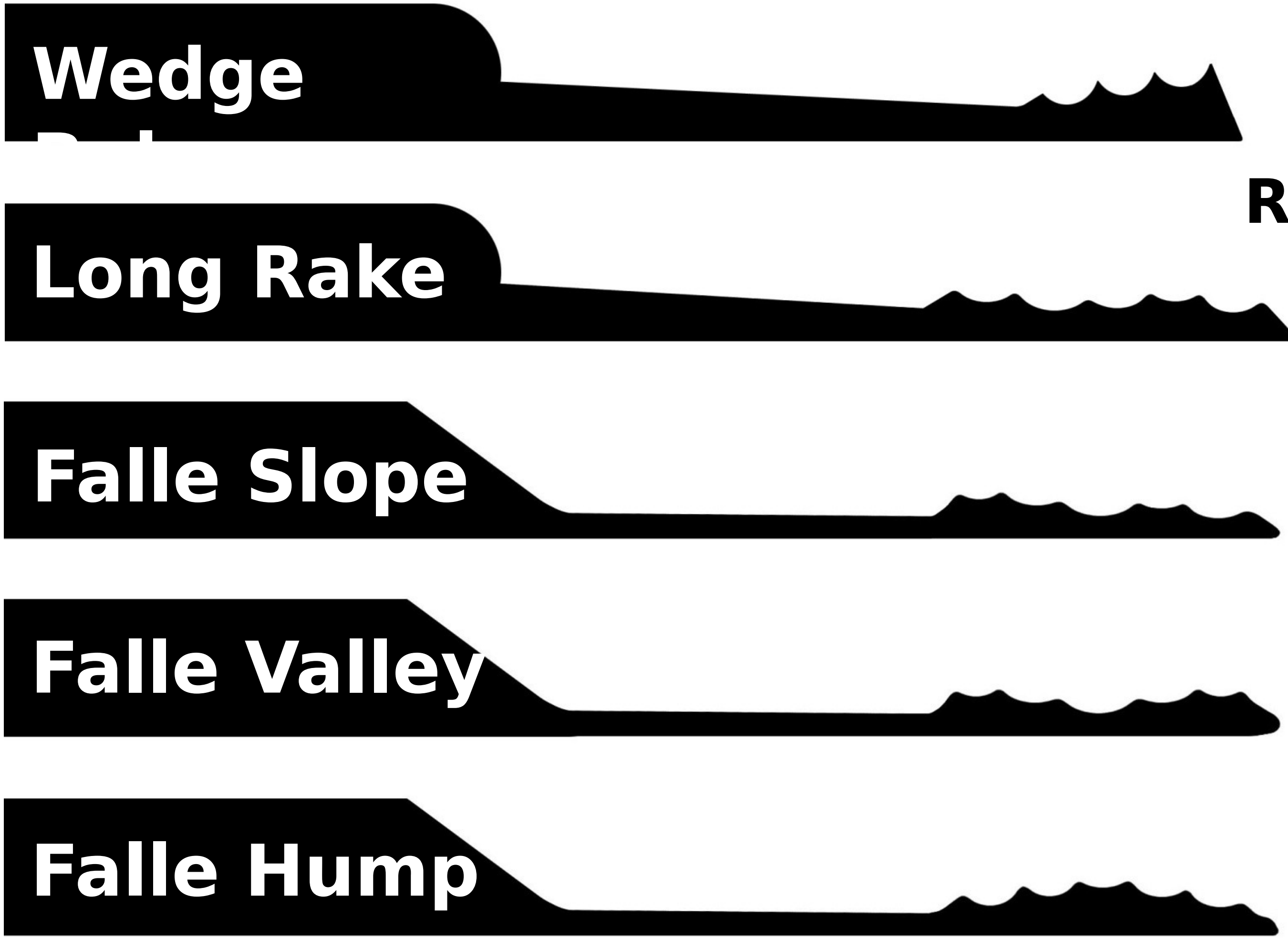
Raking



Lifting



Jagged Lifters

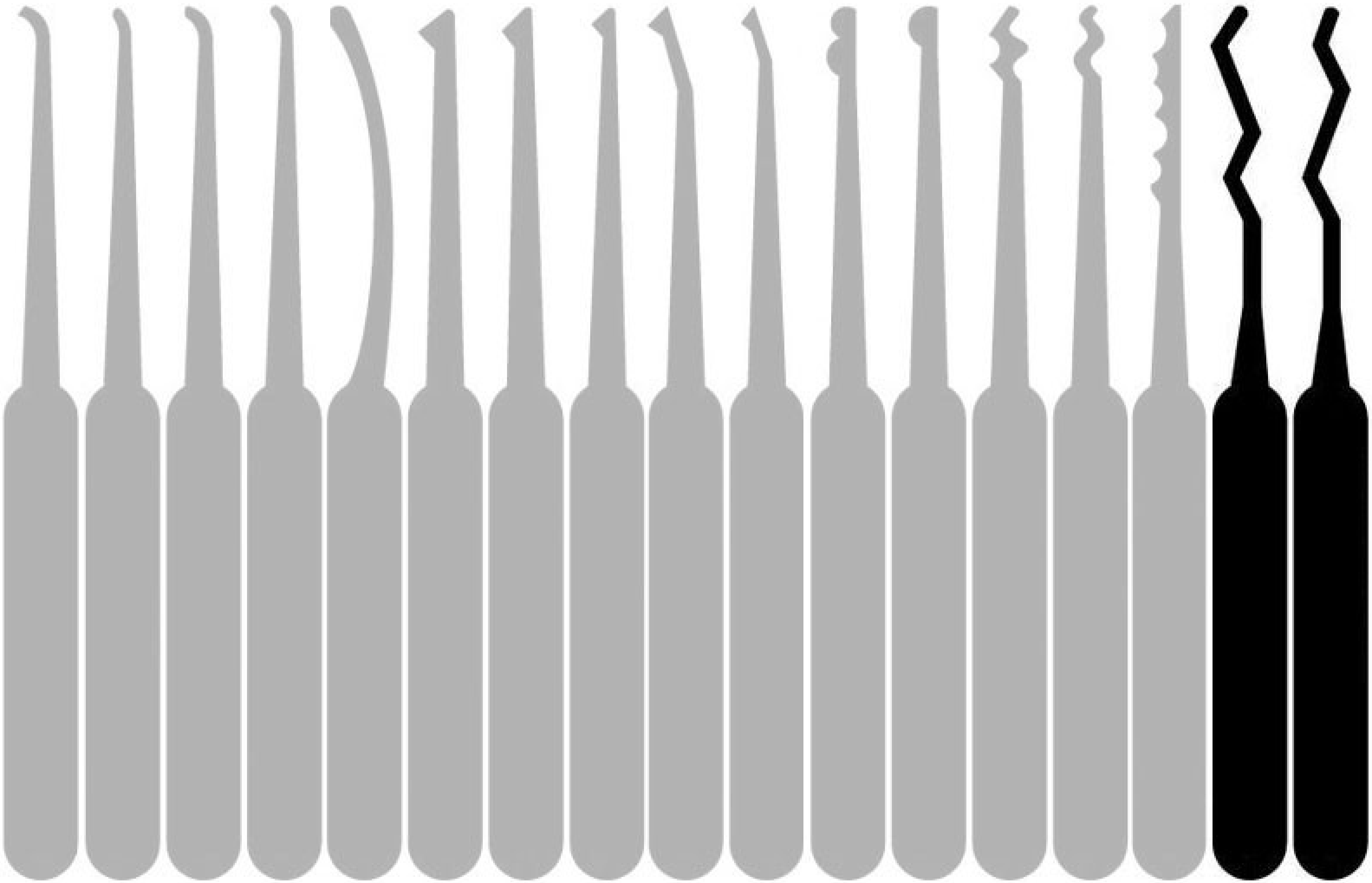


a.k.a. W Rake, Short Jag, Ramped Tool, & Stupid

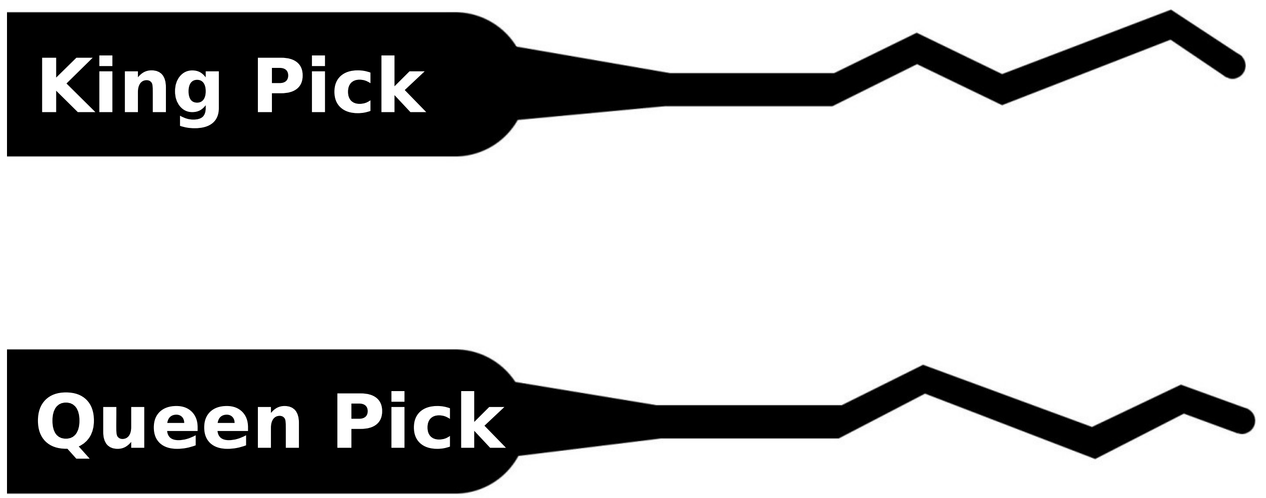
a.k.a. L Rake, Long Jag, Ripple, & Saw Tooth

a.k.a. Long Rimple

So, what on earth are *these*?



King & Queen



A major innovation in pick tools

Thanks to Minnesota…





… with a nod to Colombia

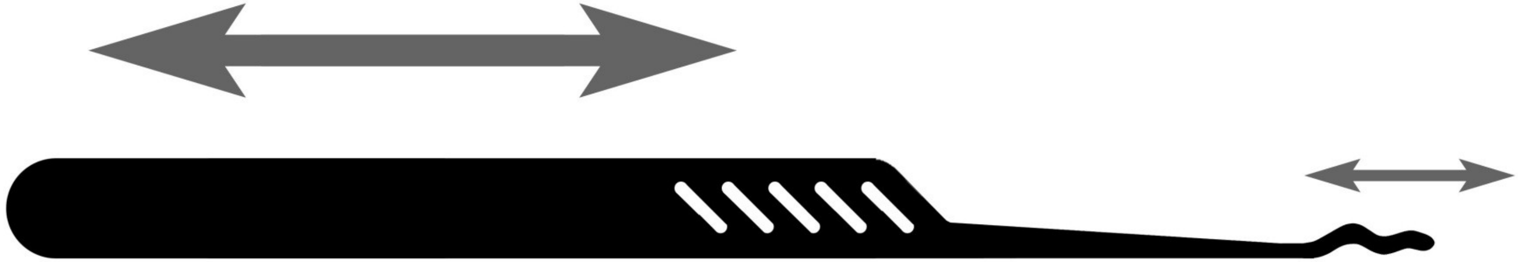
Raimundo's Family of Tools



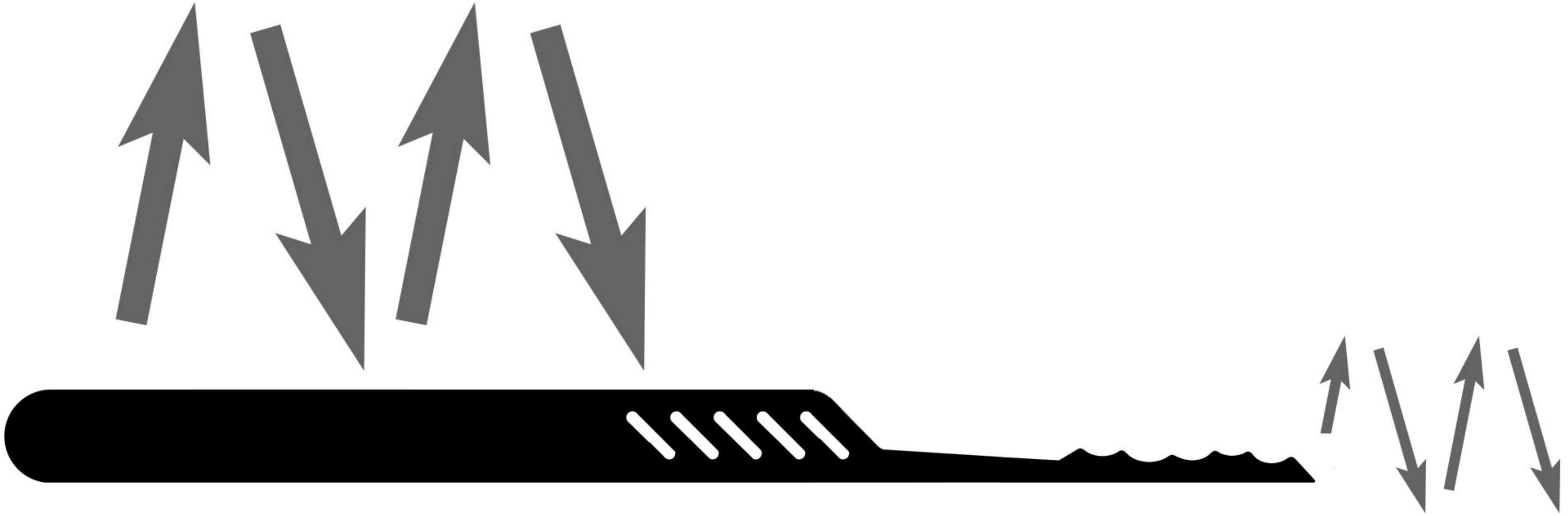
It Started with Two Tools…



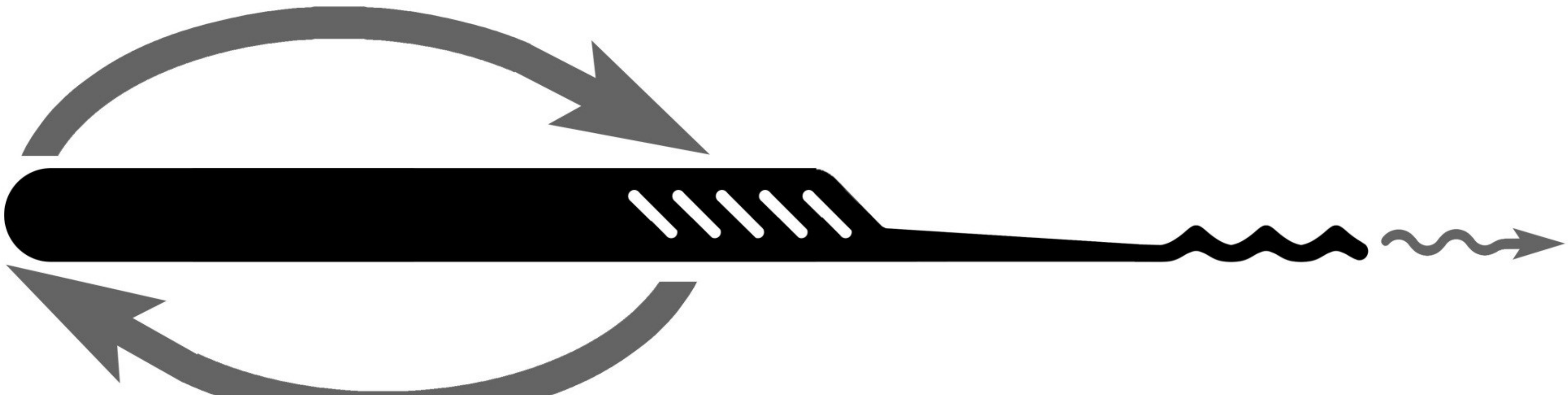
What is Jiggling?



In Between Raking & Lifting…



What is Jiggling？



… There is "Jiggling"

Bogota Family



Bogota



Single Hump a.k.a. Hollow Half Diamond



Bogota Family



Bogota



Single Hump a.k.a. Hollow Half Diamond



Two Hump a.k.a. Camel



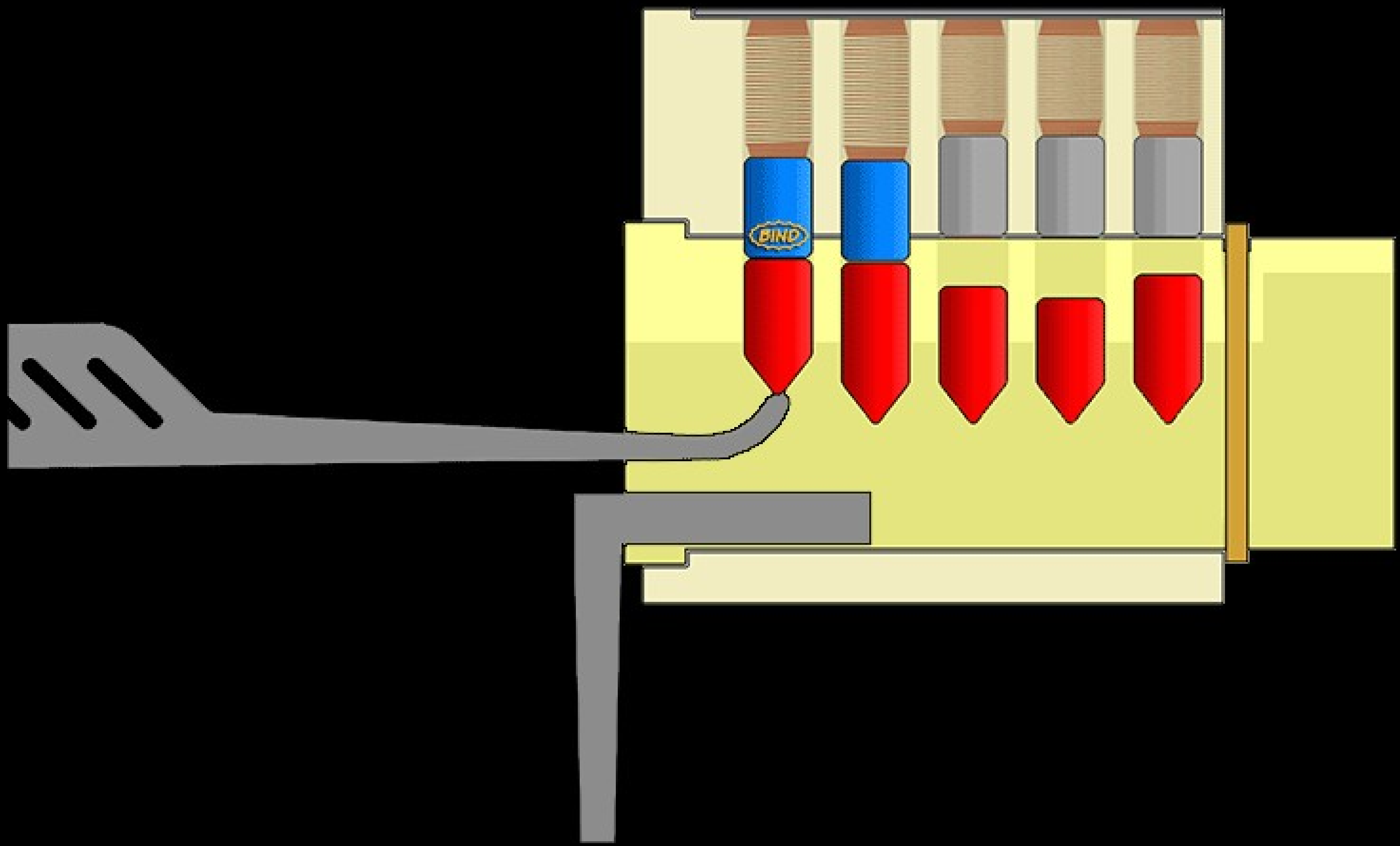
Quad Hump



Sabana

http://theamazingking.com/bogota.html

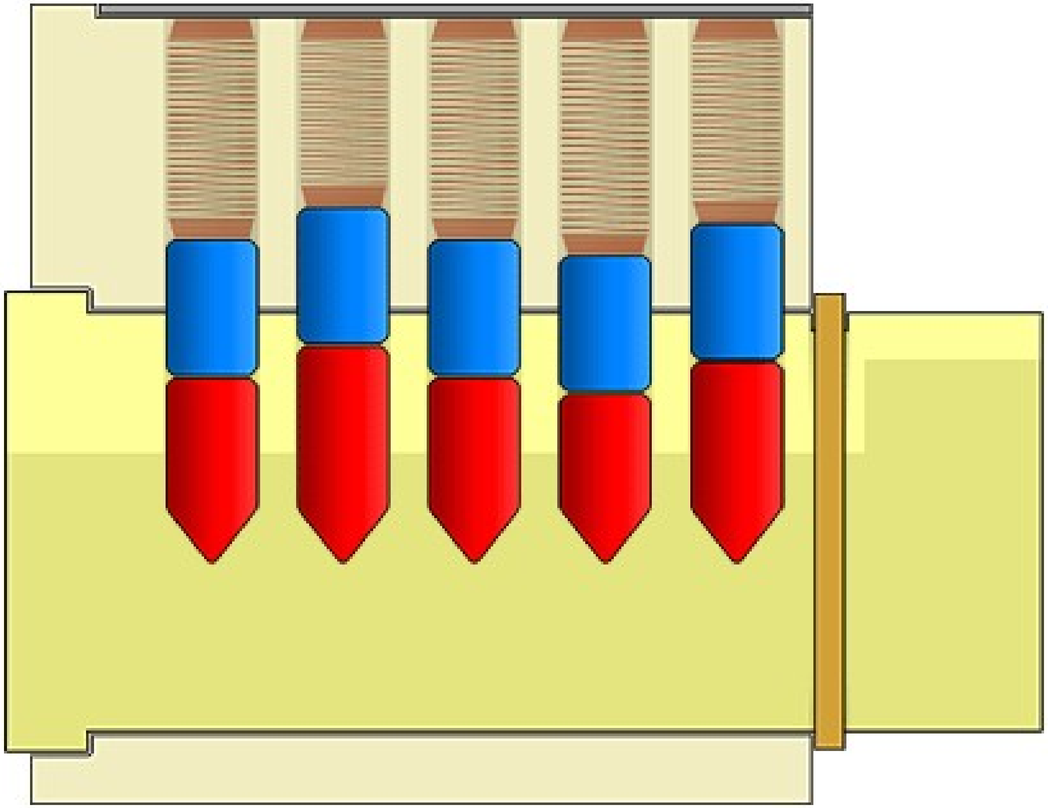
Questions?



Lockpicking & Forensics



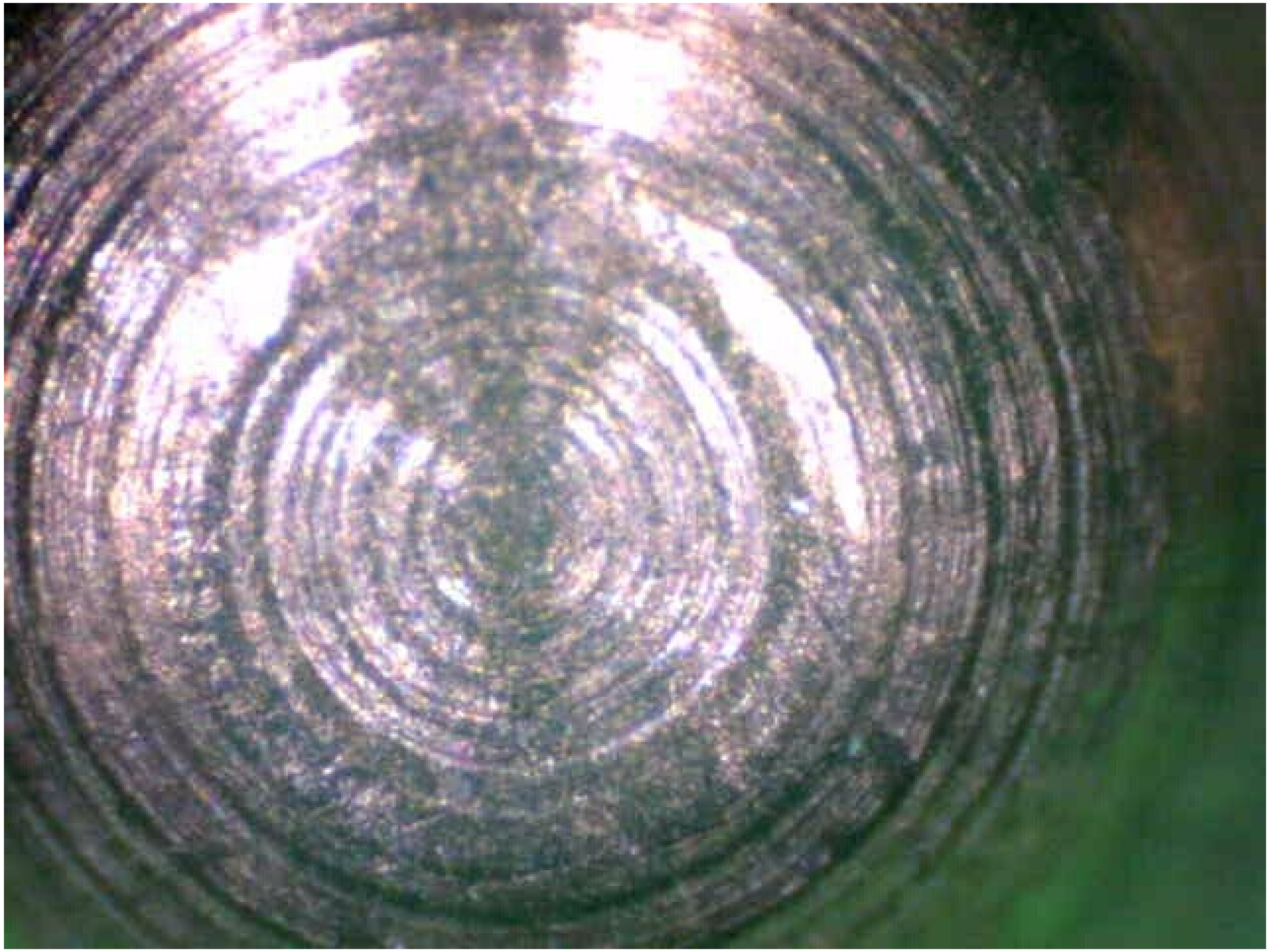
Keys Touch Very Specific Places



Virgin Pins Have Specific Patterns From Manufacturing



Concentric Tiny Ridges on Pin Face



Those Rings “Polish Away” With Use

250 Uses



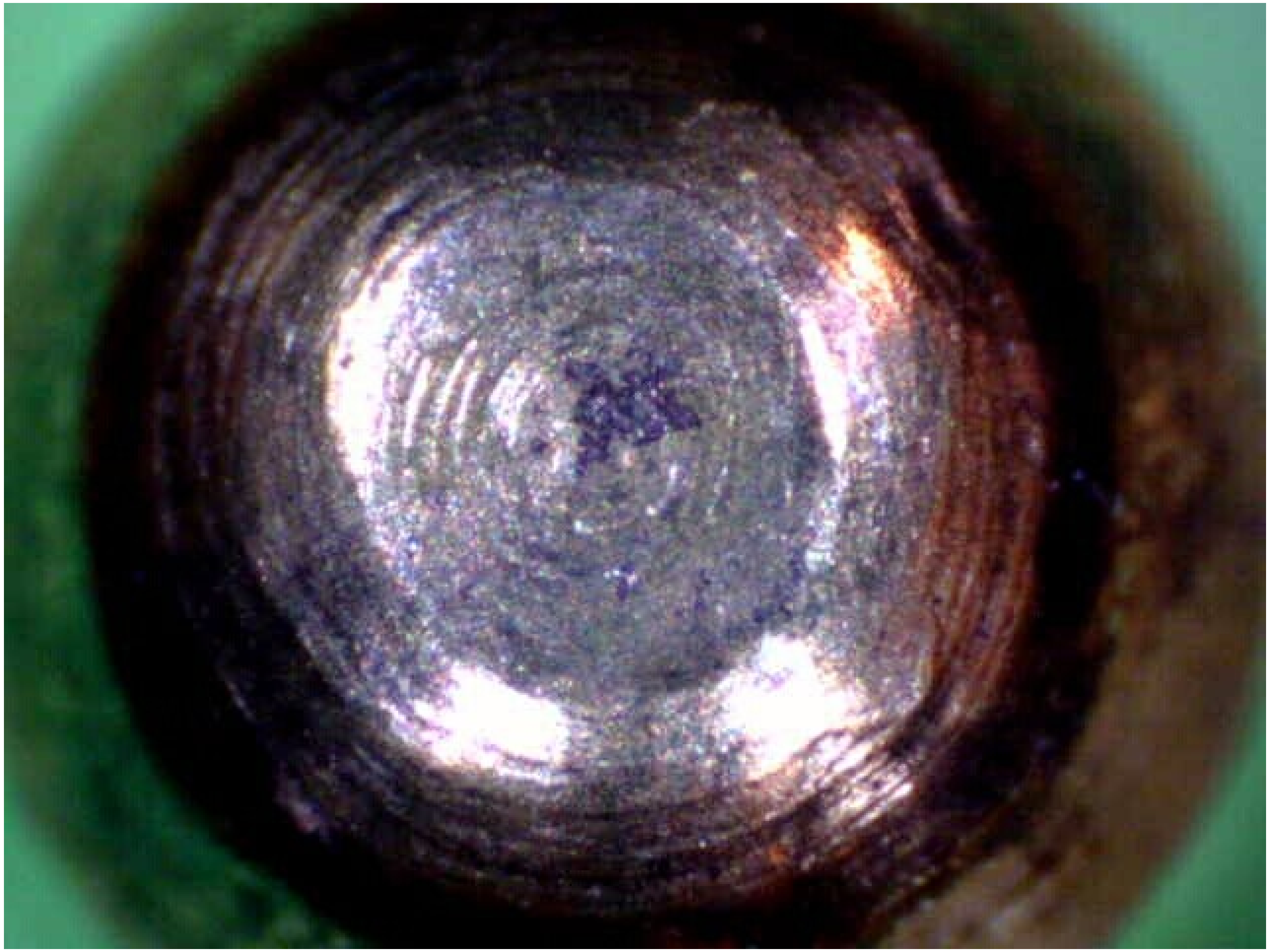
Those Rings "Polish Away" With Use

1500 Uses



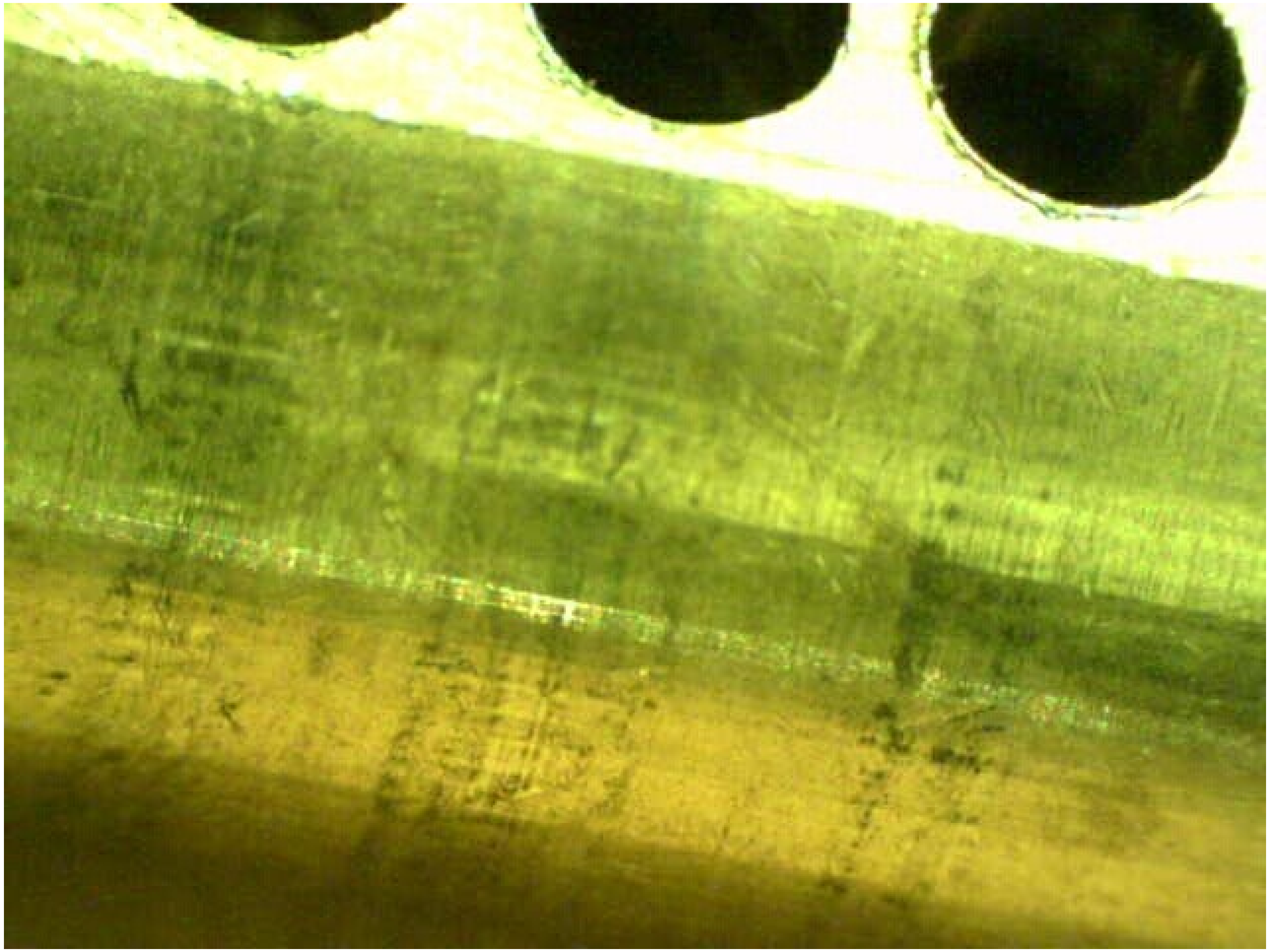
Those Rings “Polish Away” With Use

5000 Uses



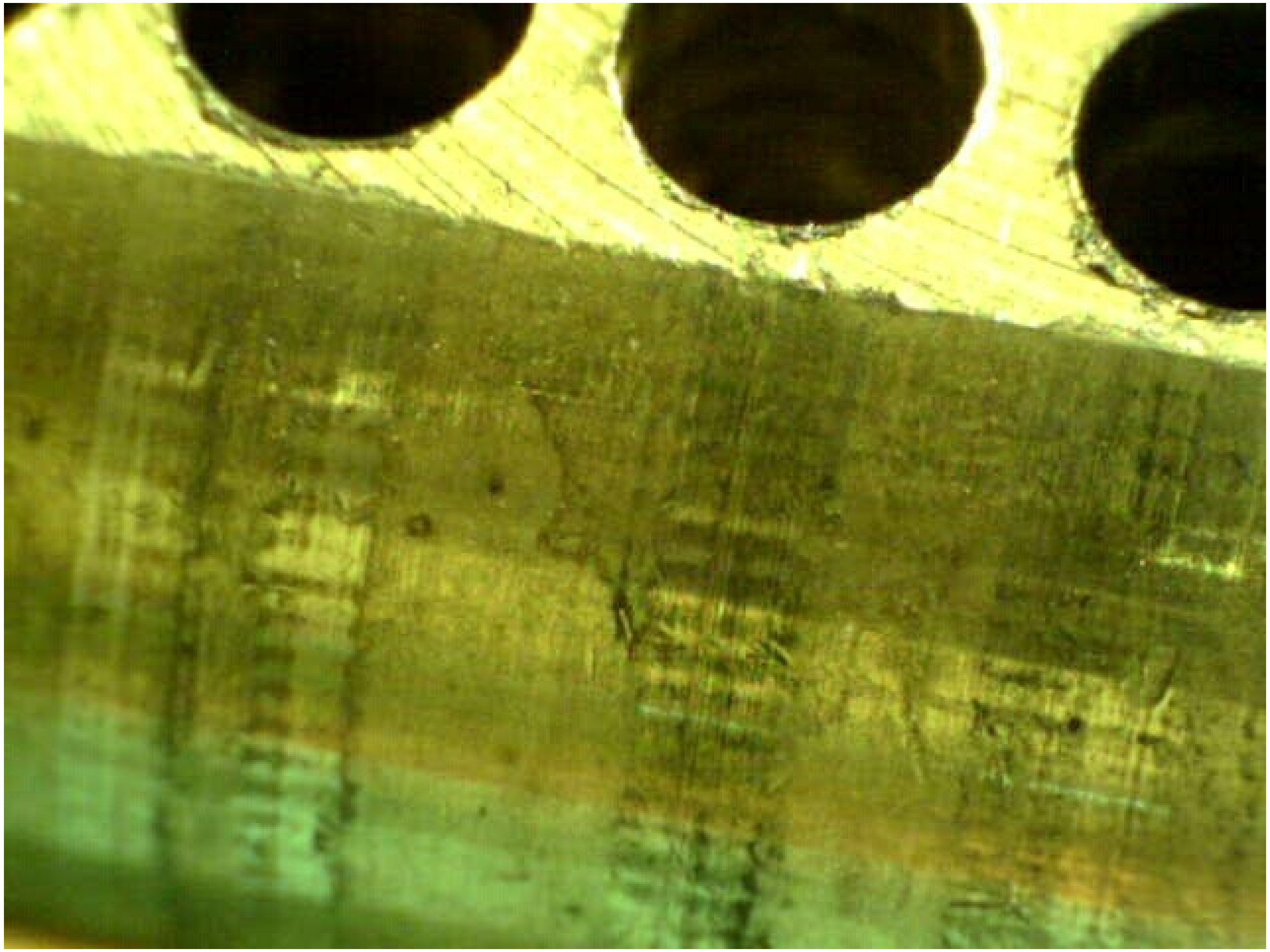
The Plug Picks Up Marks From Driver Pins

250 Uses



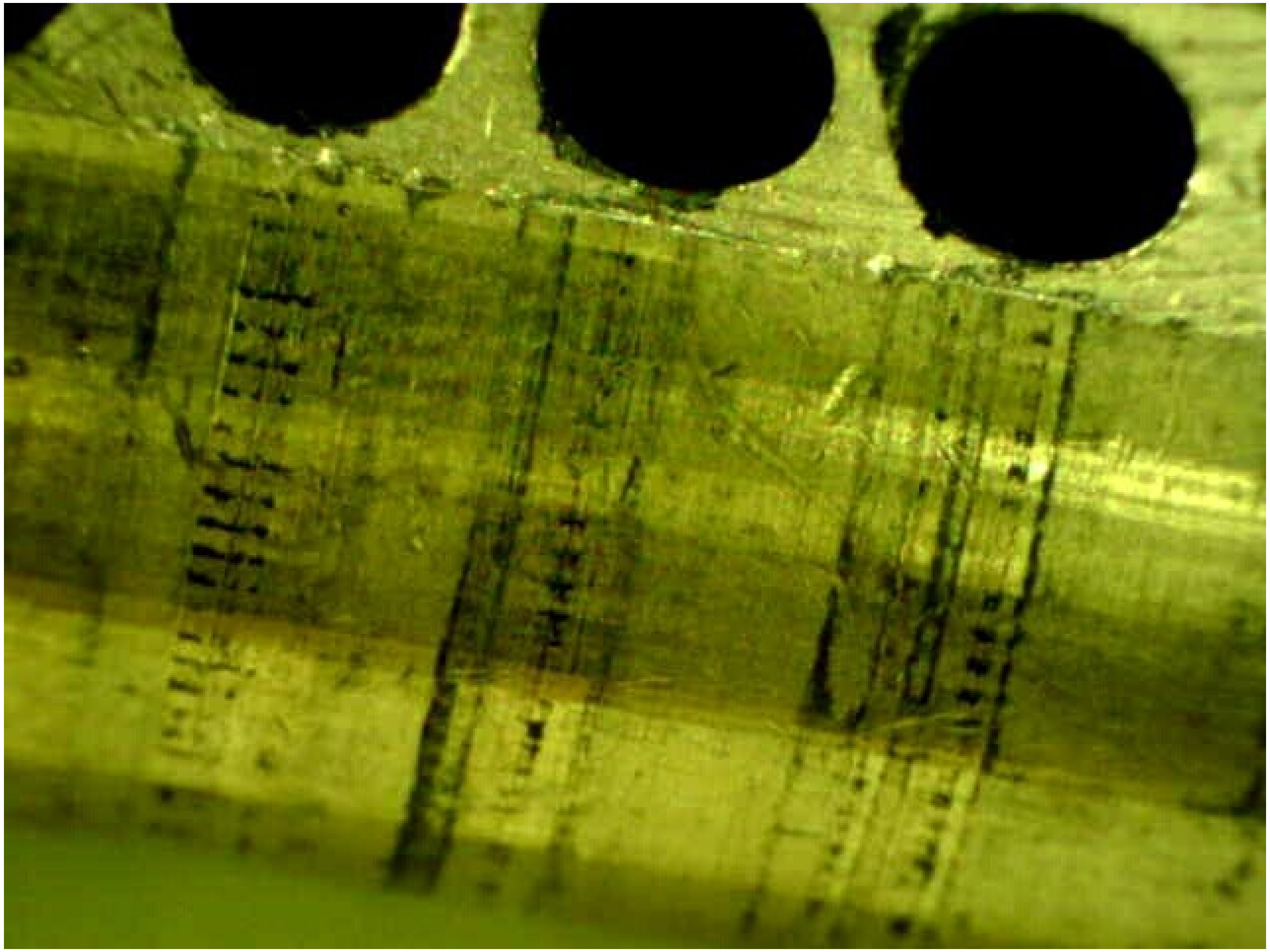
The Plug Picks Up Marks From Driver Pins

1500 Uses

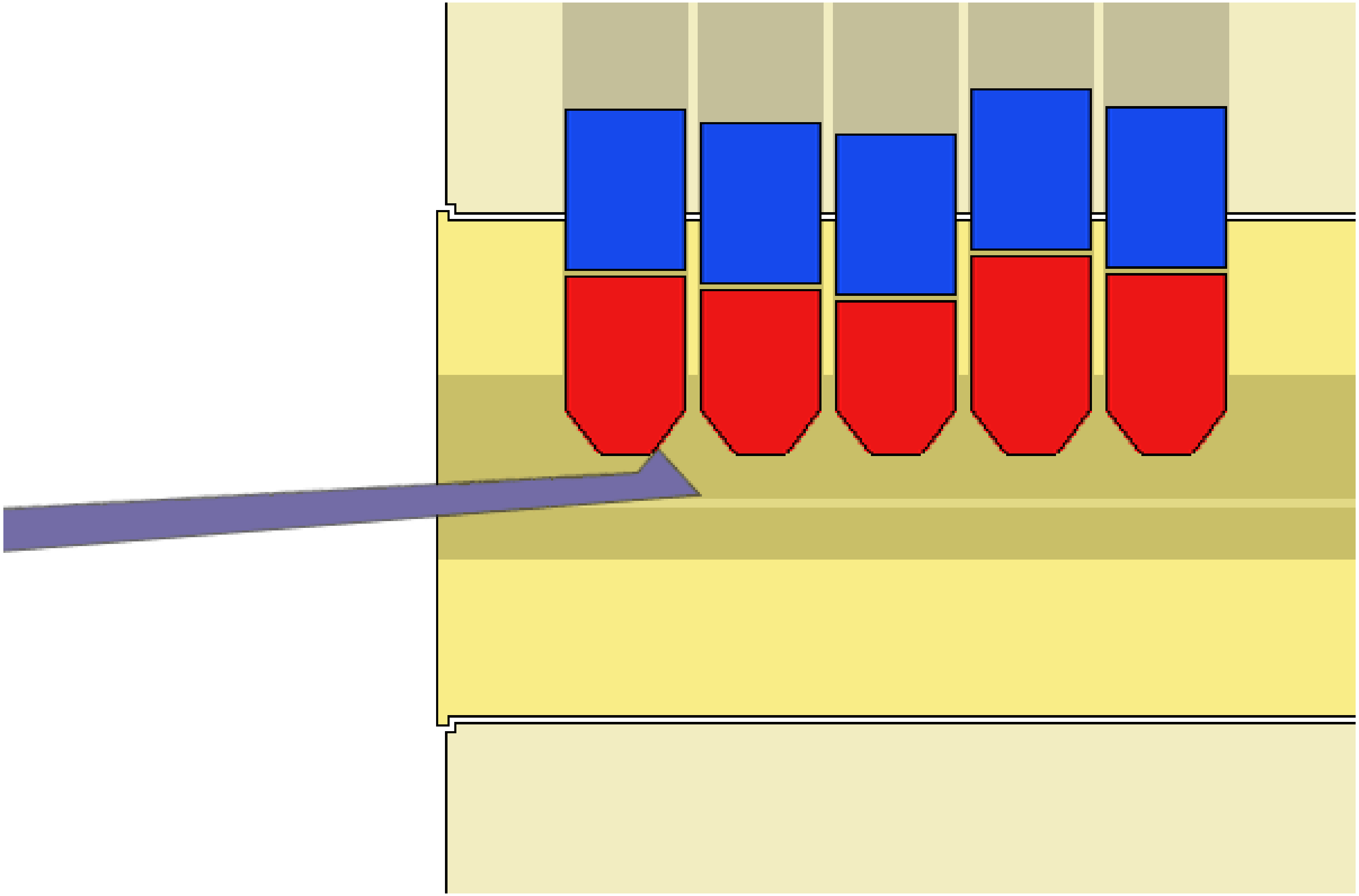


The Plug Picks Up Marks From Driver Pins

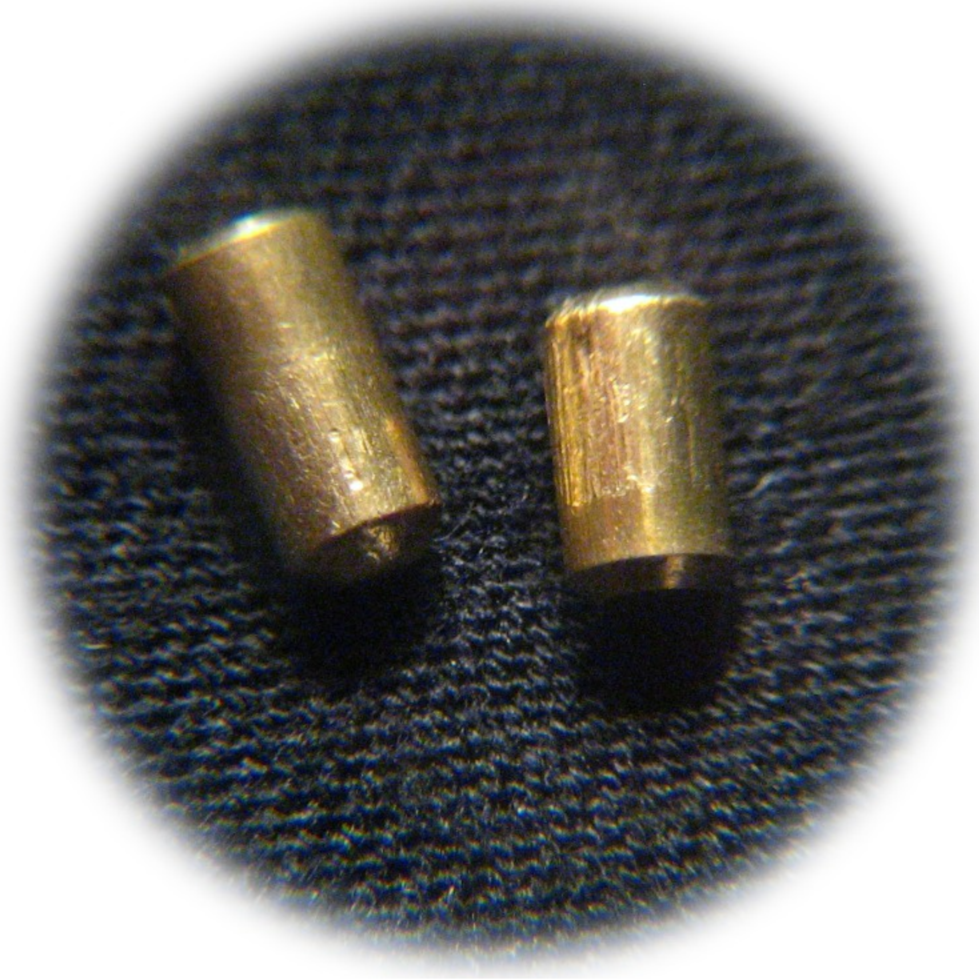
5000 Uses



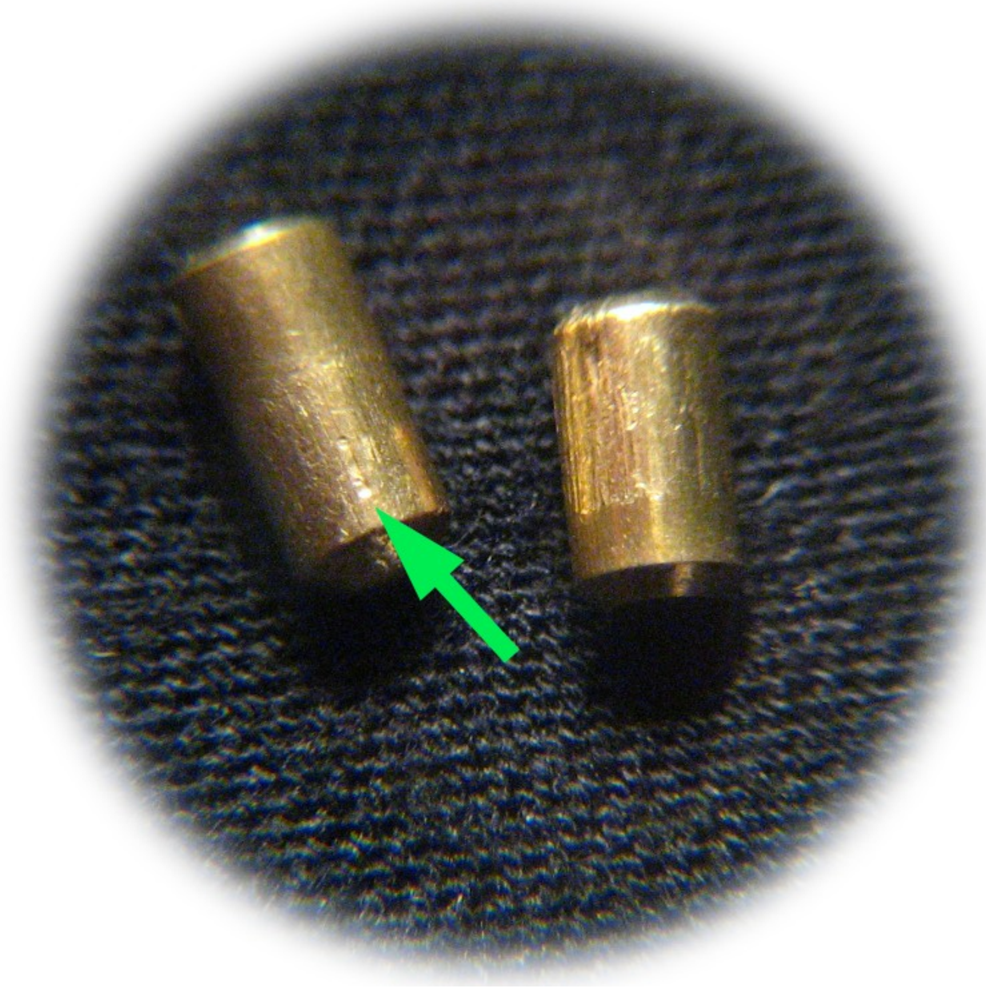
Picks Touch Places That Keys Don't



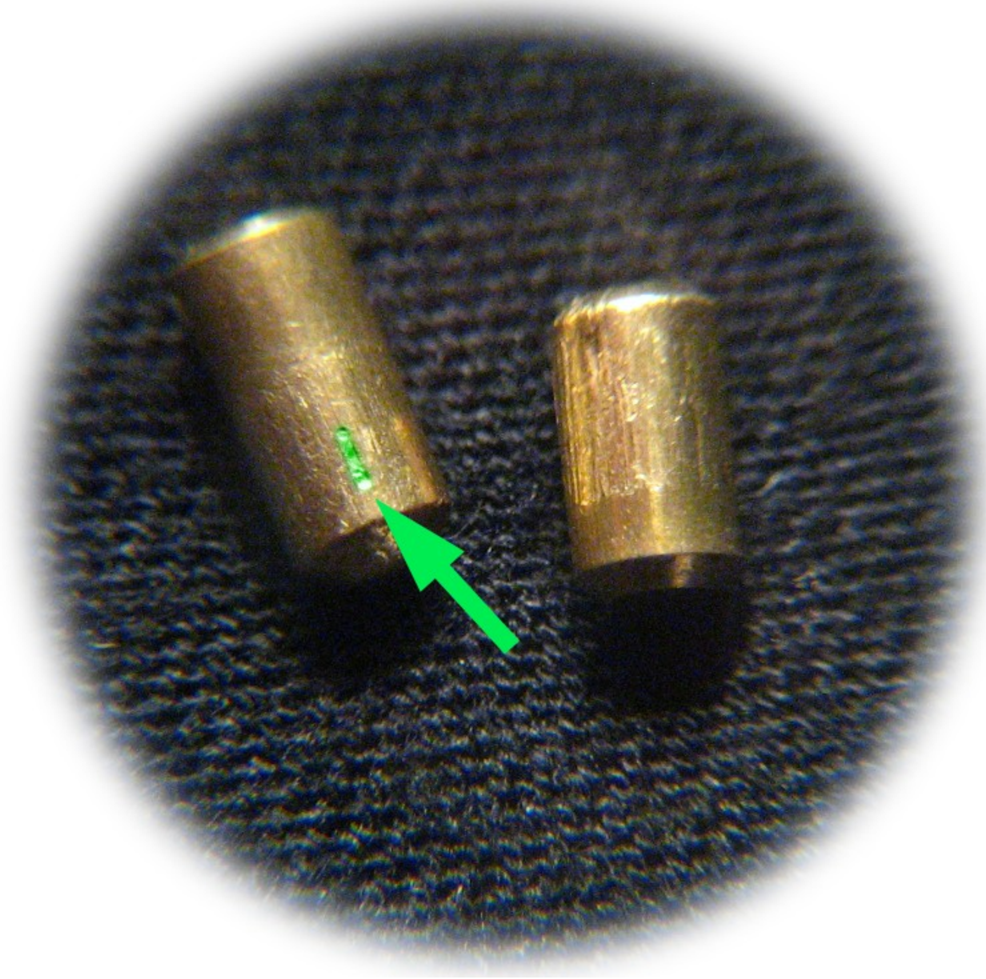
Wear and Tear or Toolmarks ?



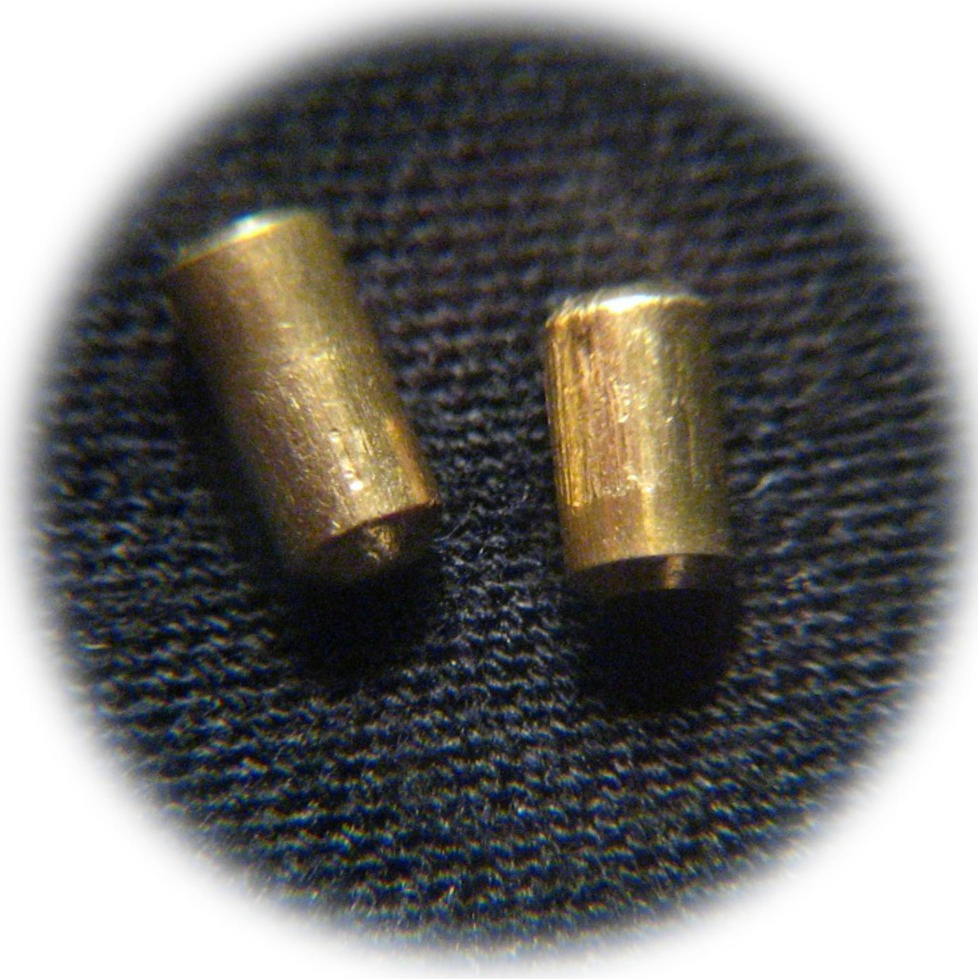
Wear and Tear or Toolmarks ?



Wear and Tear or Toolmarks ?



Wear and Tear or Toolmarks ?



Forensics – Lifting Picking



Forensics – Raking



Forensics – Mixed Styles of Picking



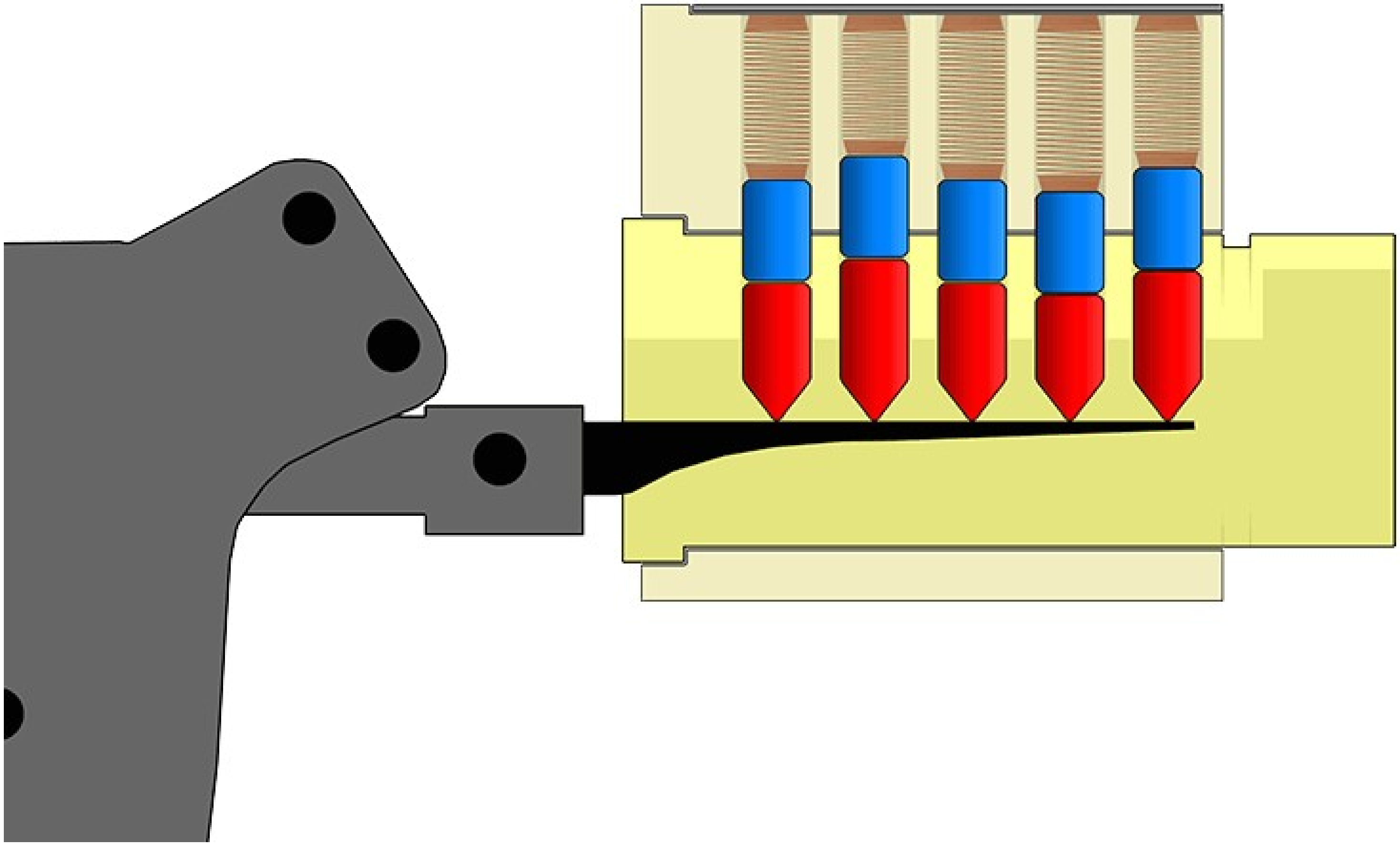
Forensics – Ugh... Who Did This ??



Forensics – Even Skilled Pickers and Soft Touches Leave Marks



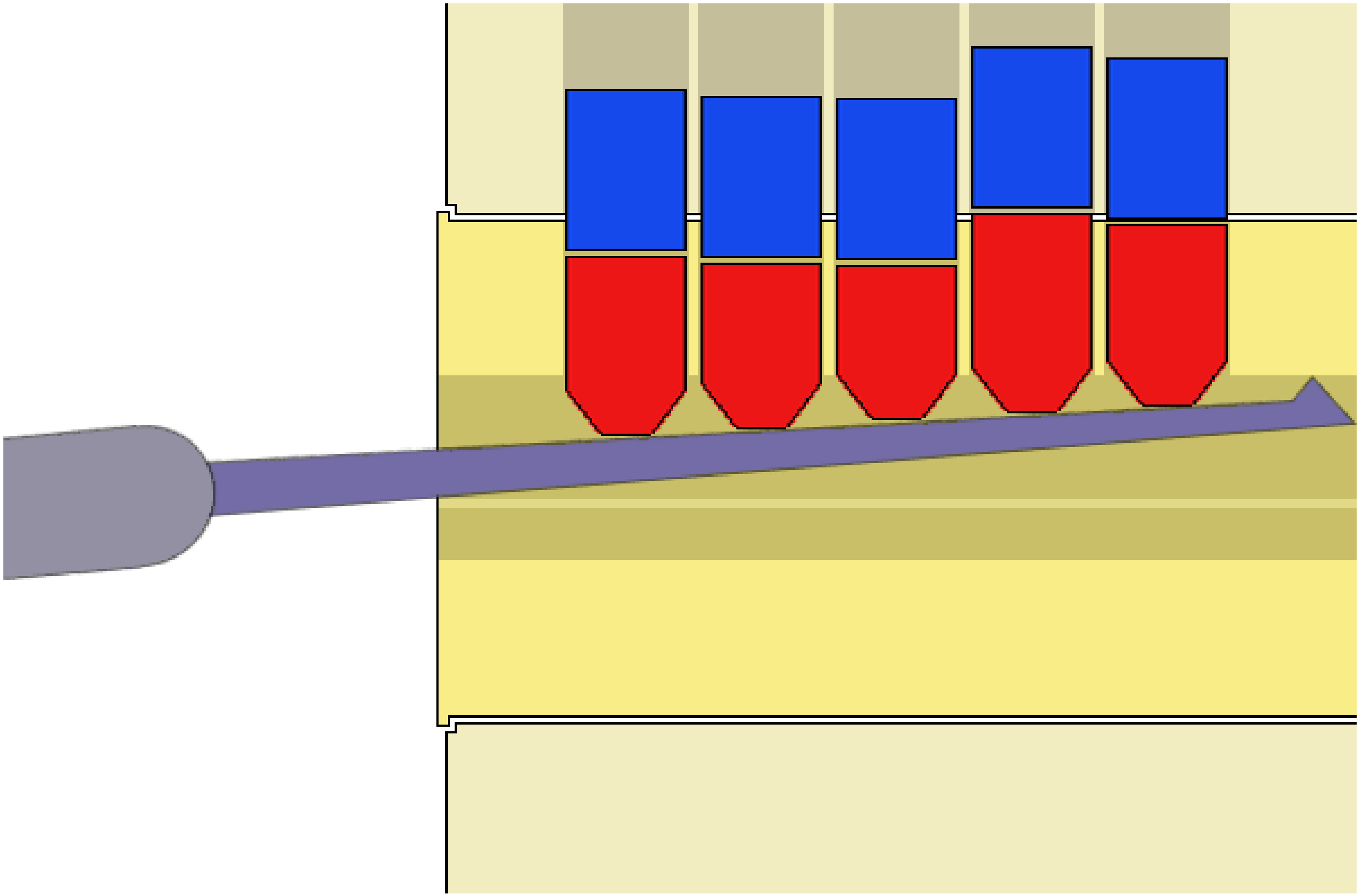
Forensics of Snapper Guns



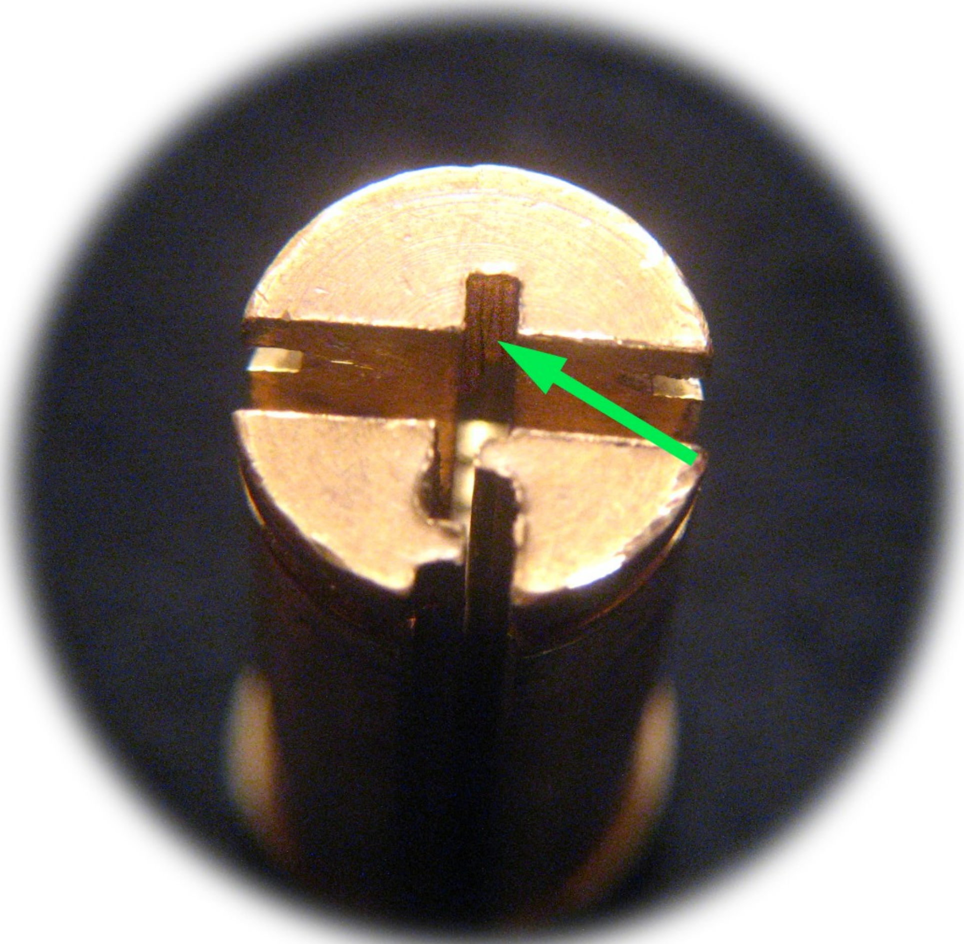
Repeated Snap Marks



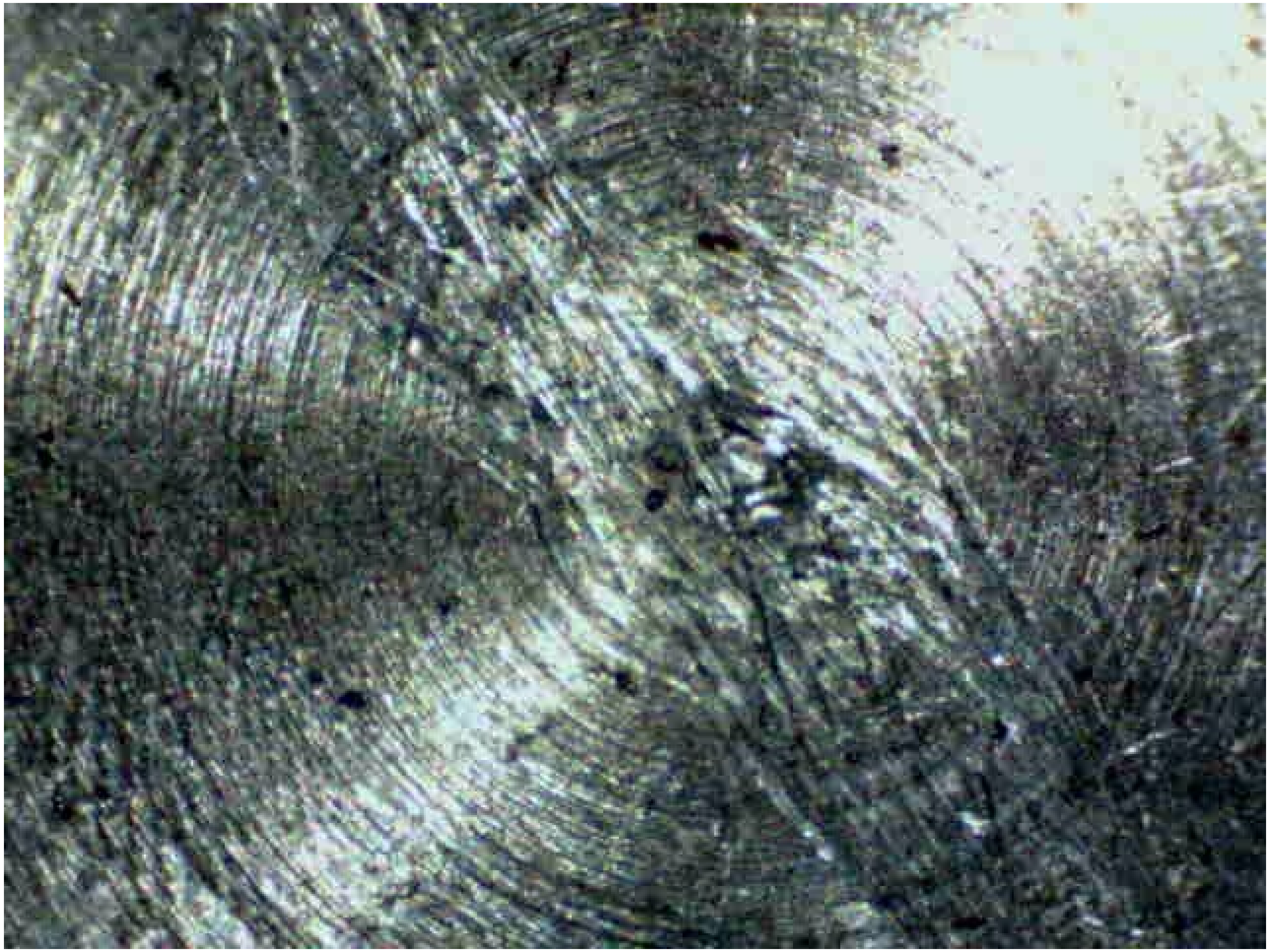
Some People Poke Too Deep



Tools Too Deep – Marks in Rear Top of Keyway



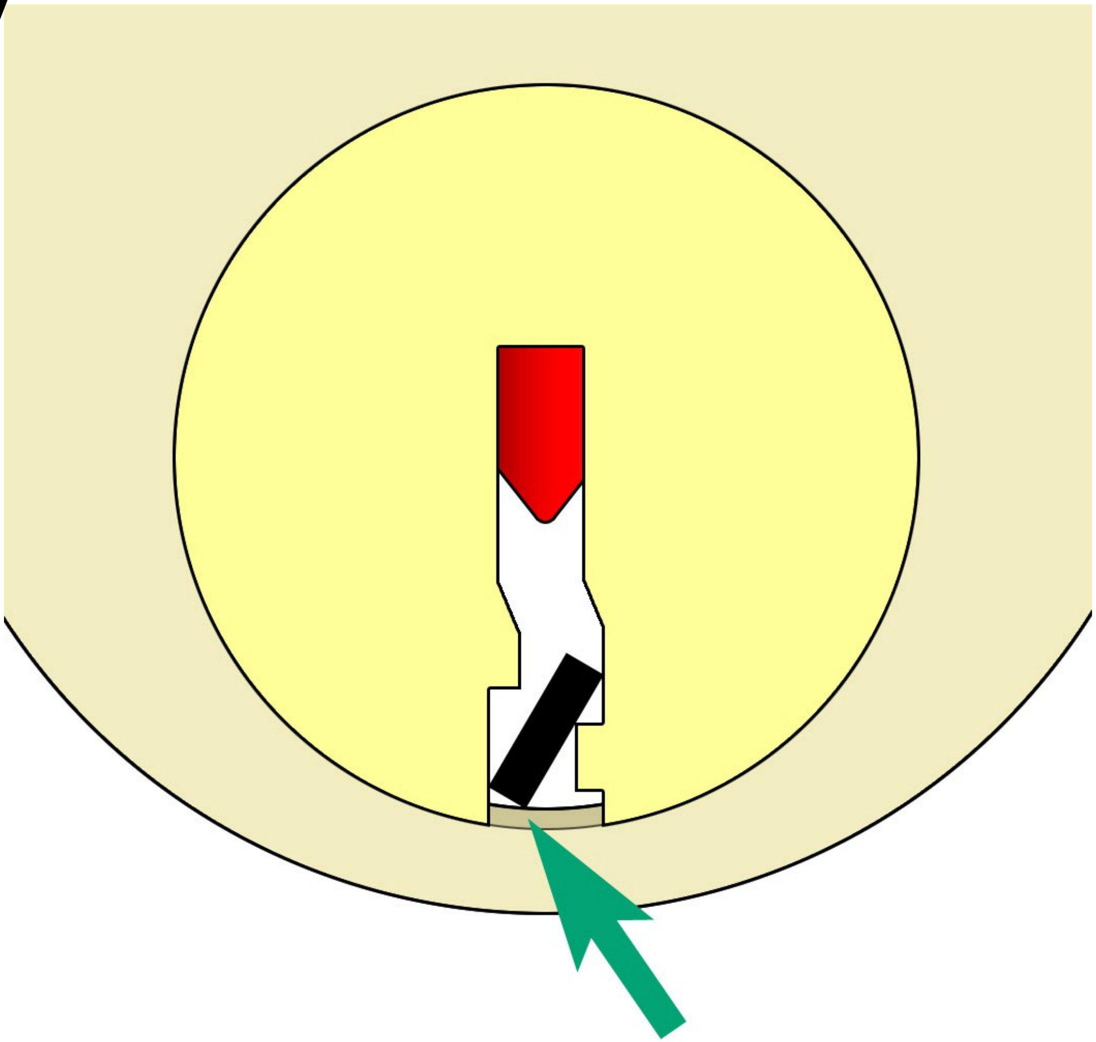
Tools in Too Deep – Marks on Tail Cap



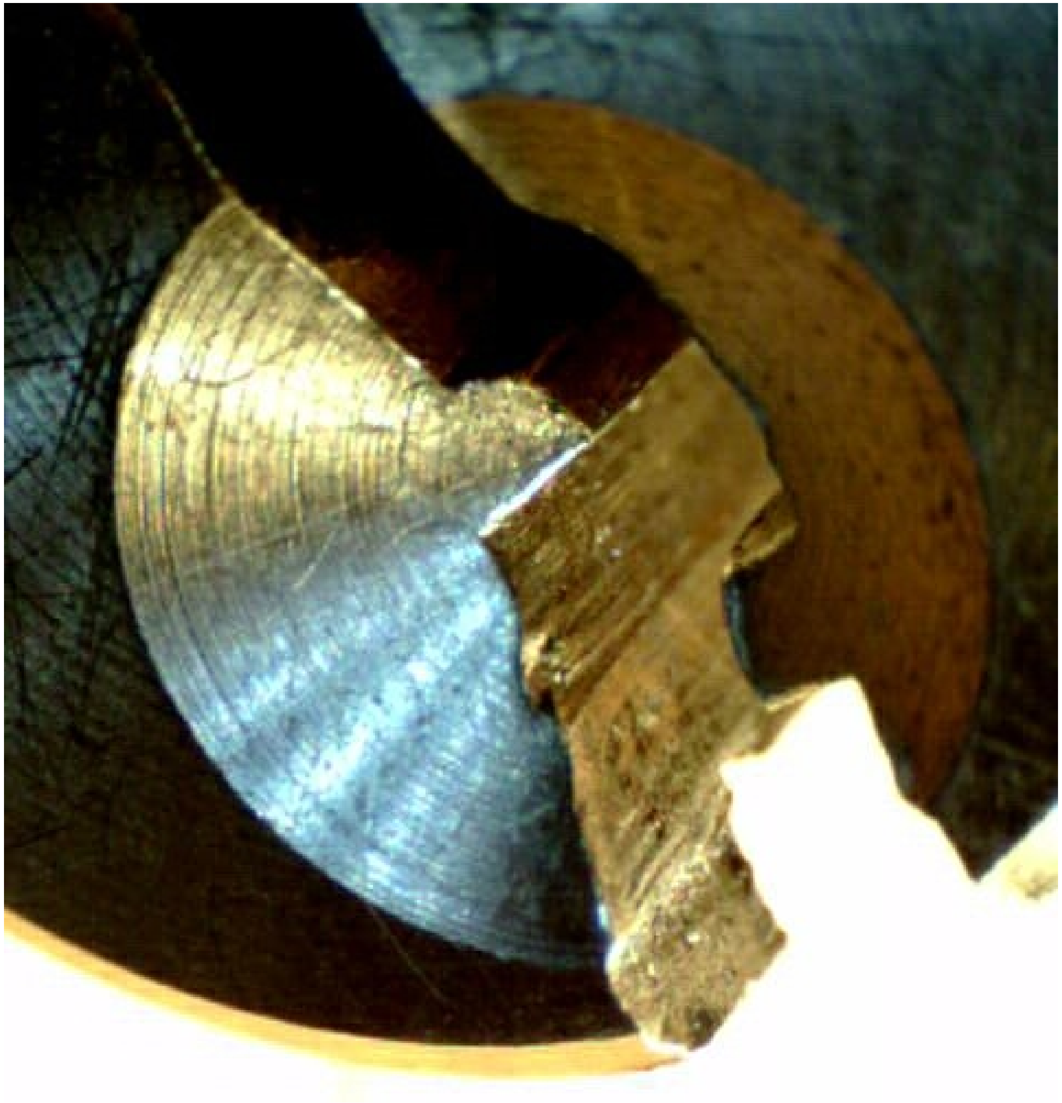
Tension Tools in the Keyway



Tension Tools can “Pinch” the Keyway



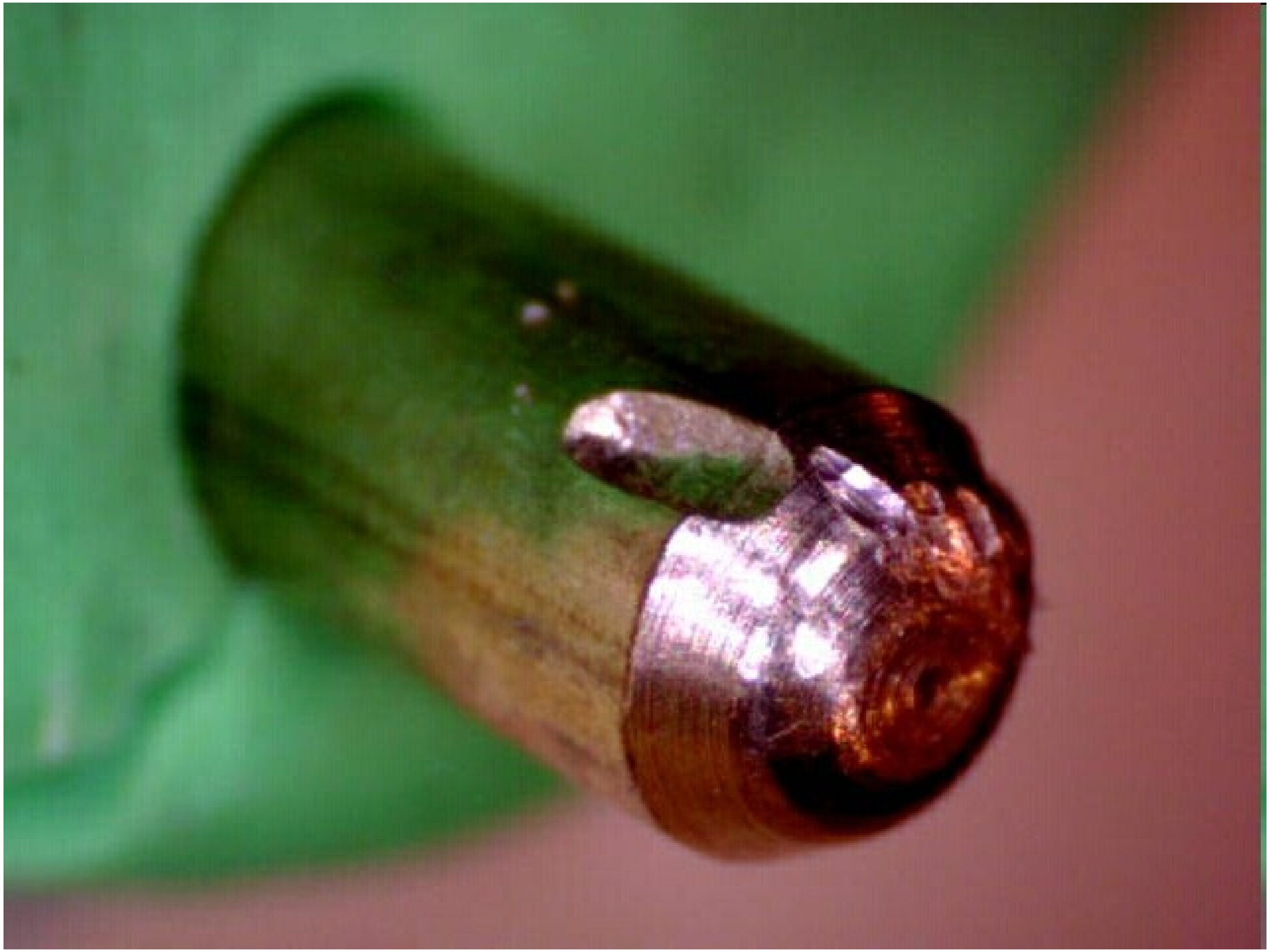
Tension Tools can “Pinch” the Keyway



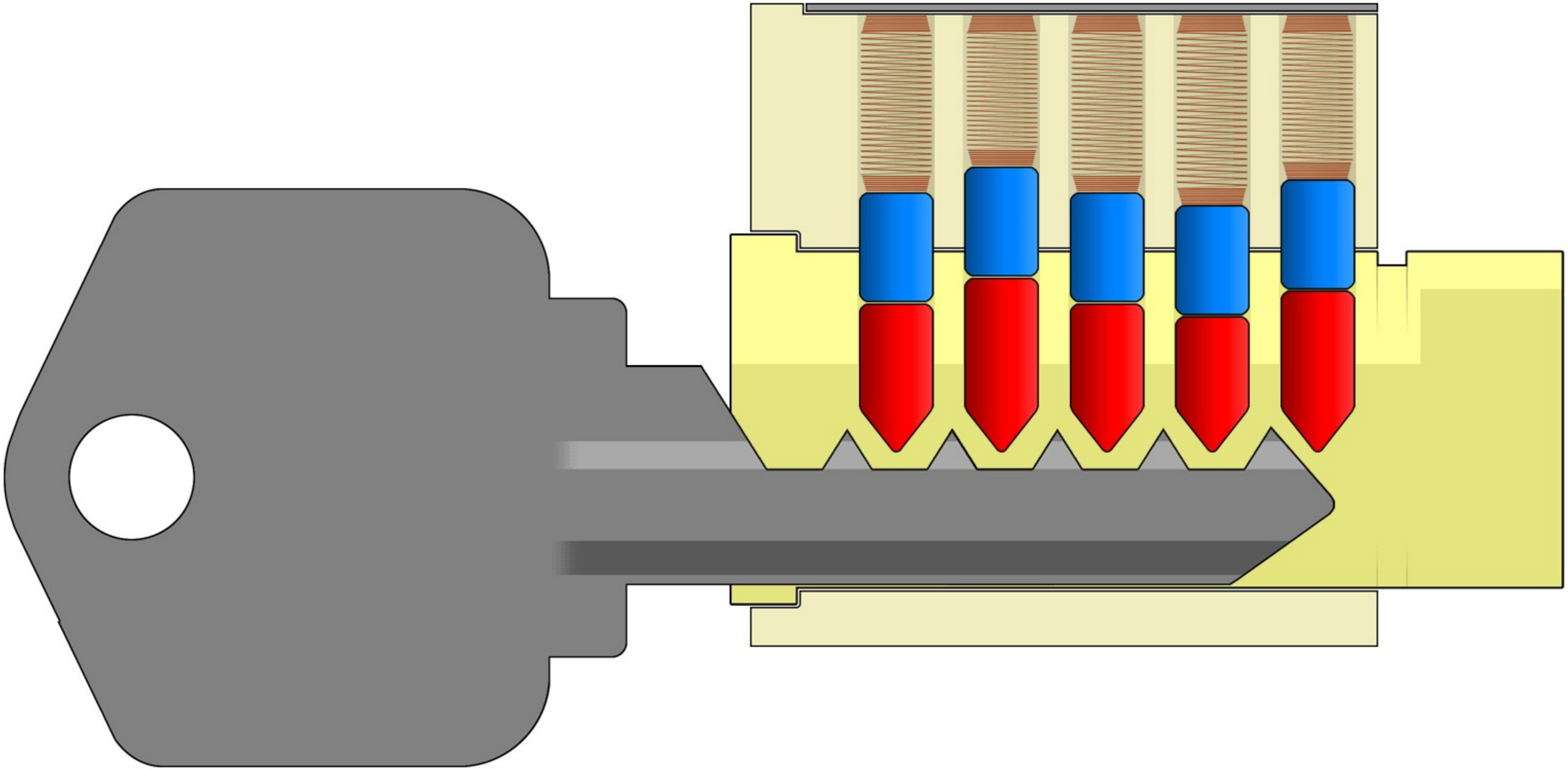
Fraudulent Toolmarks



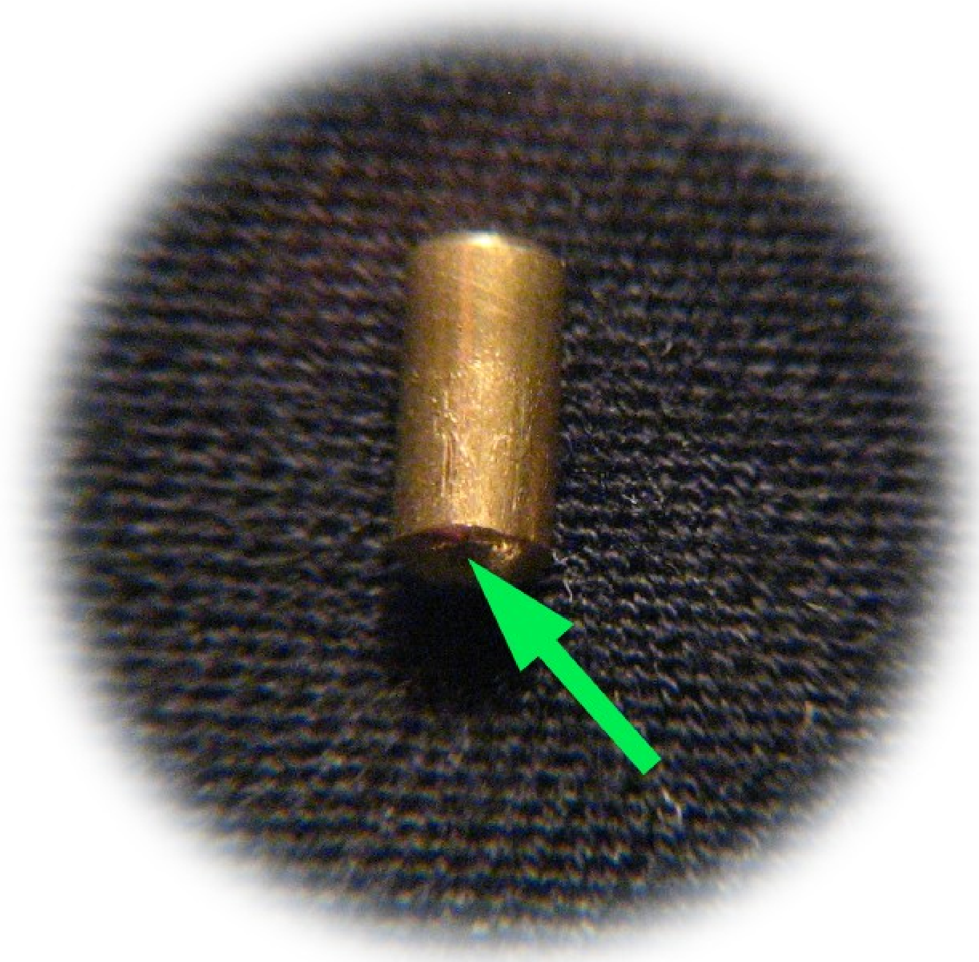
Fraudulent Toolmarks



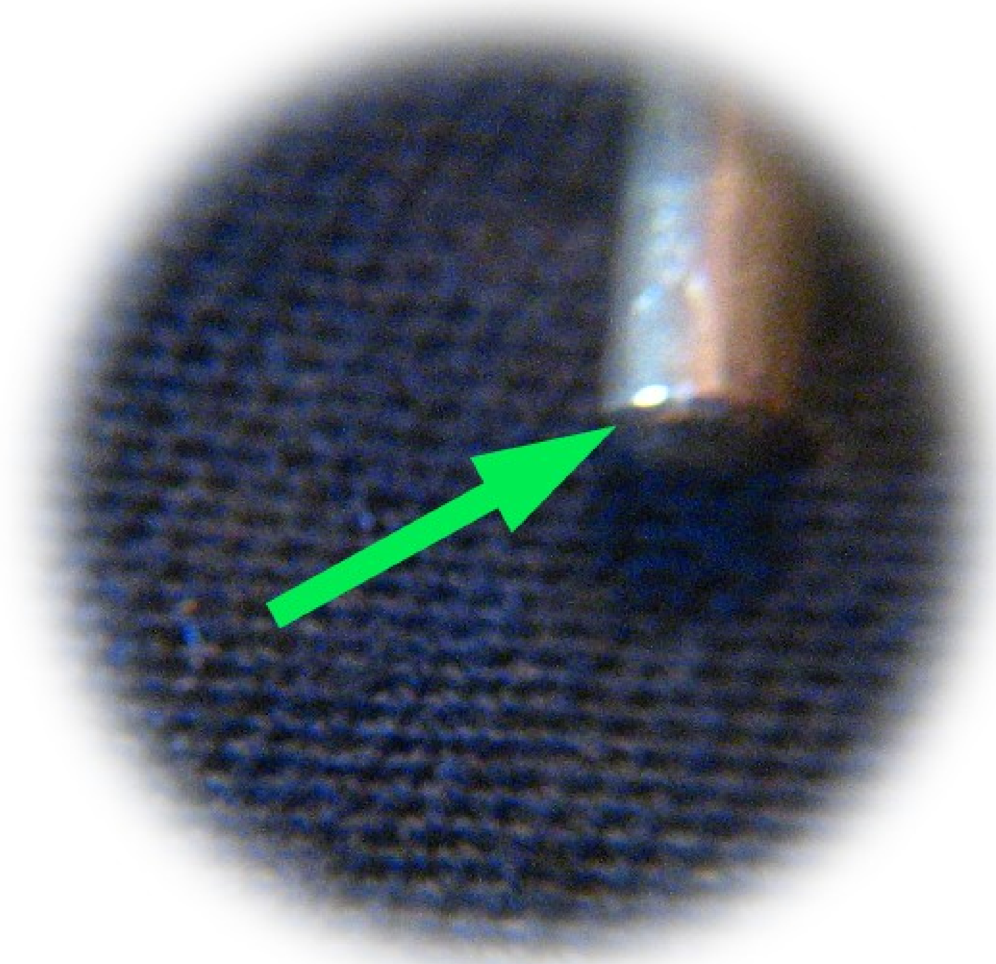
Bump Key Forensics



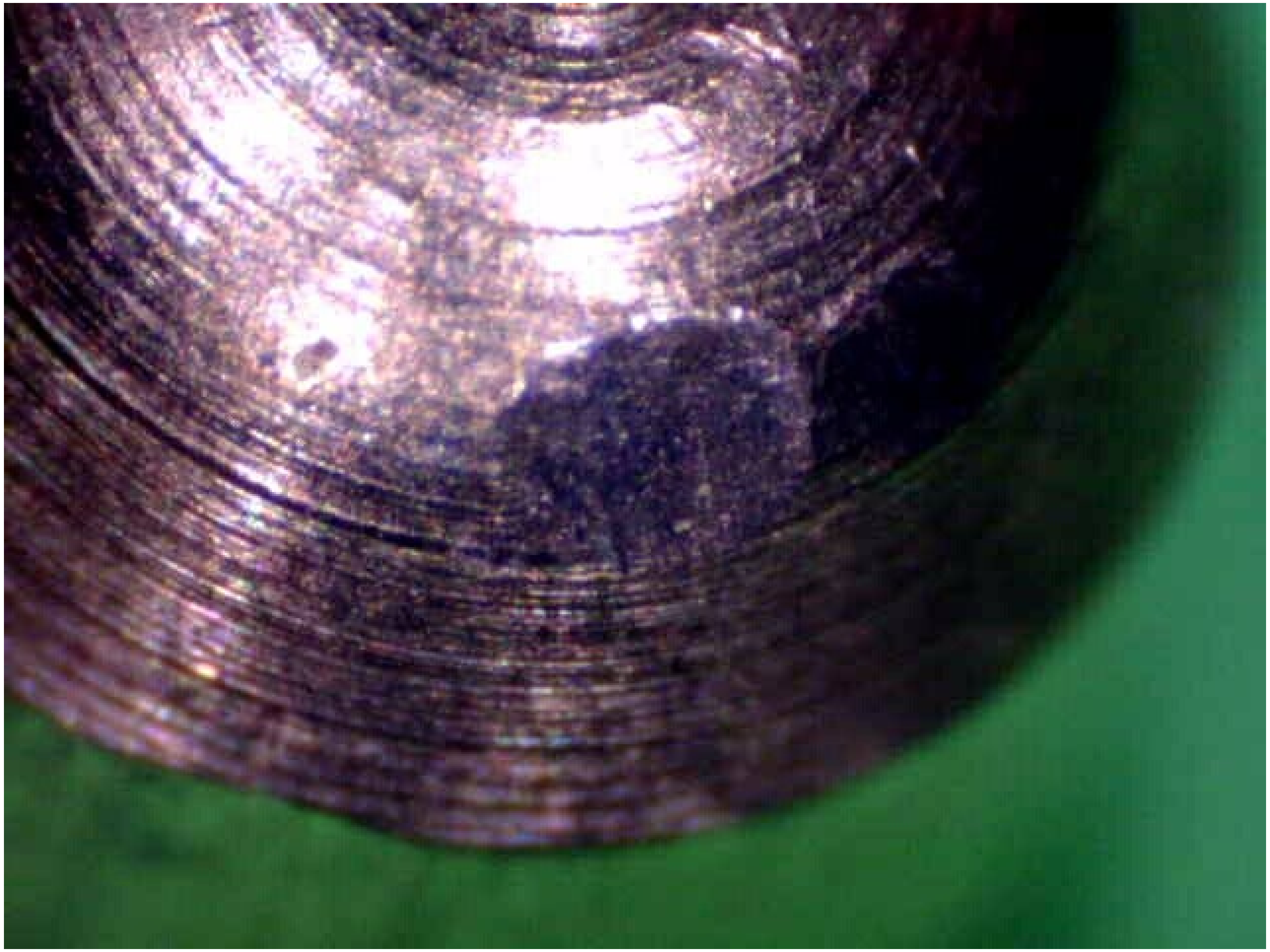
Bump Key Forensics



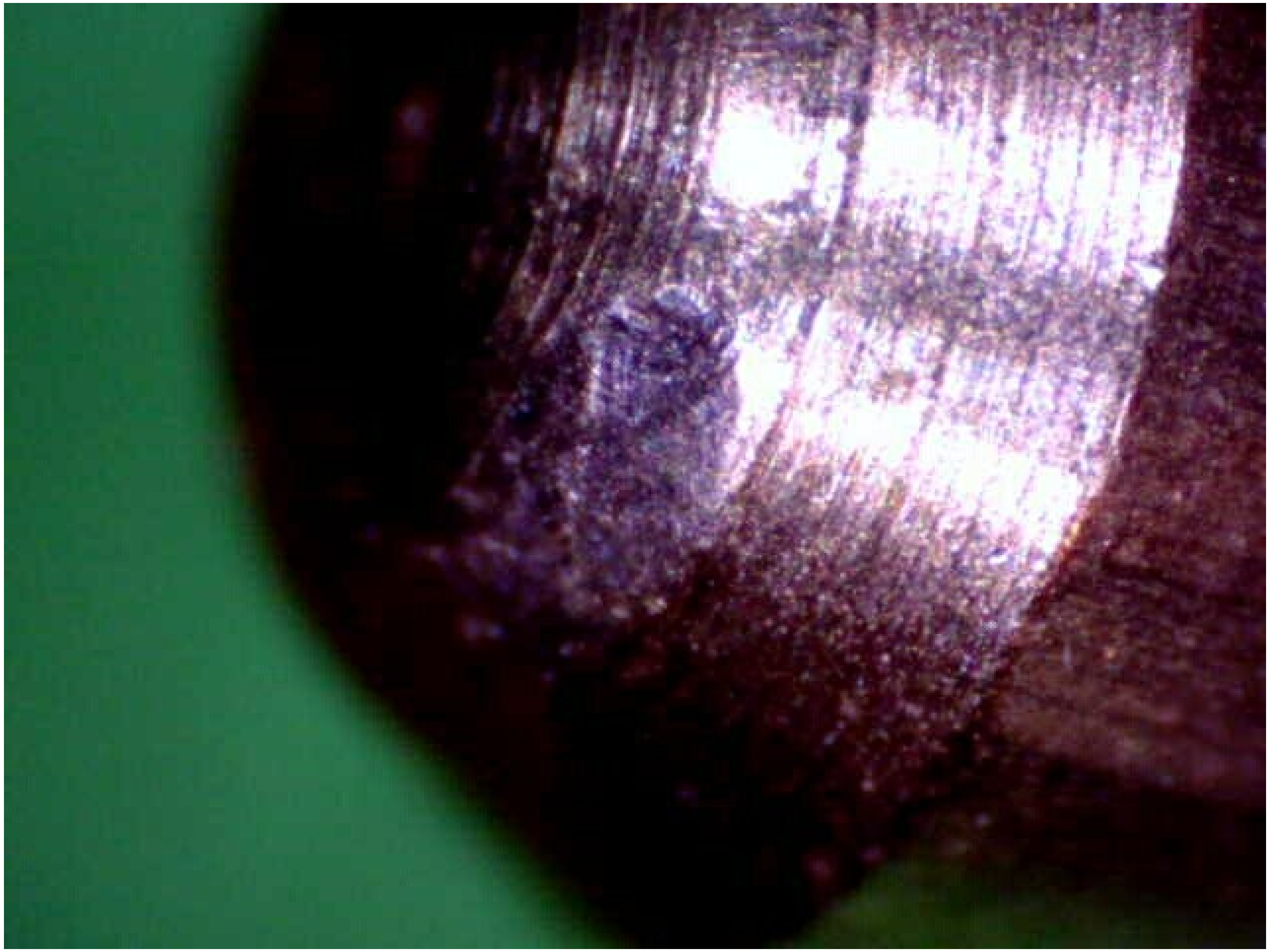
Bump Key Forensics



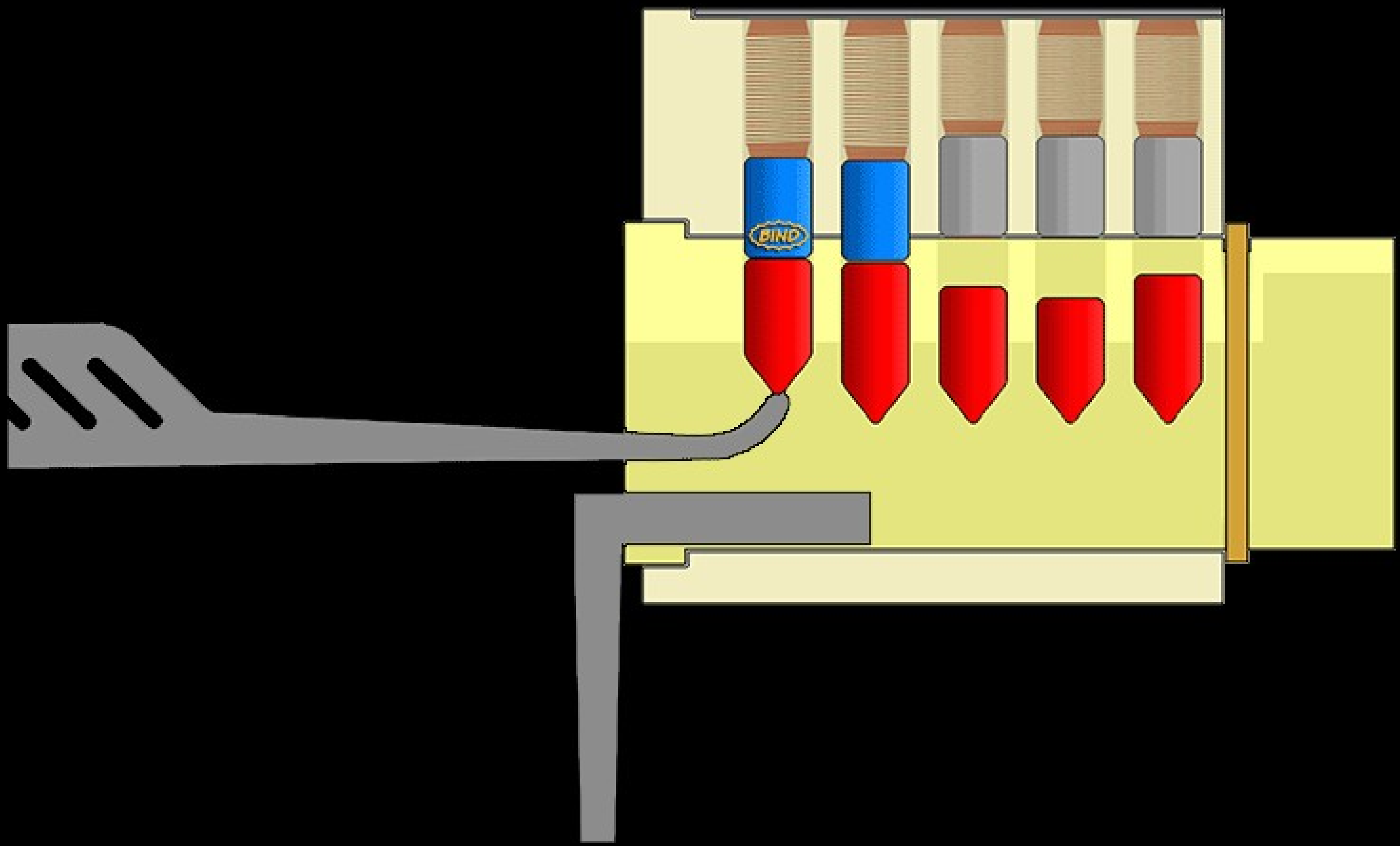
Bump Key Forensics



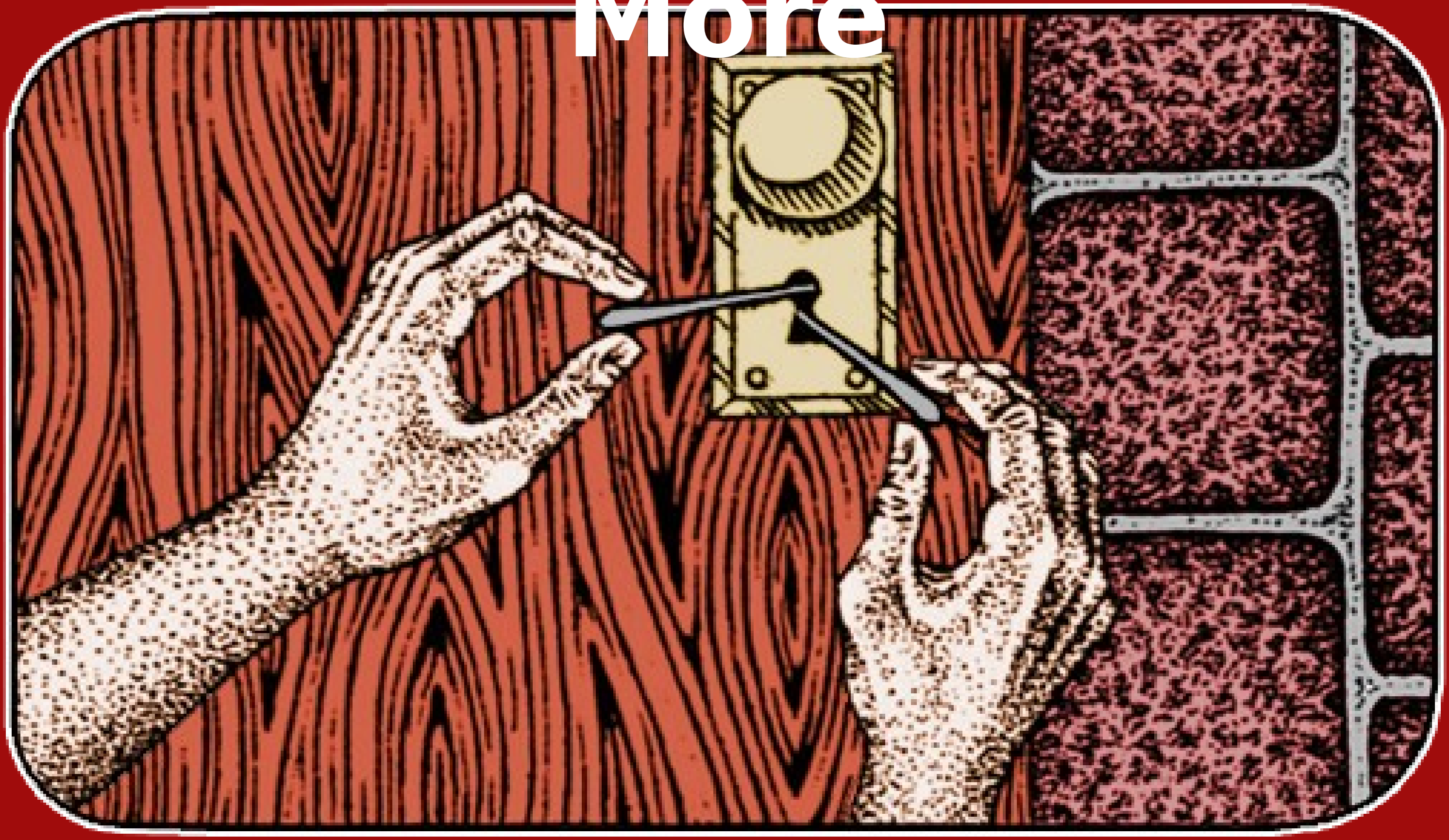
Bump Key Forensics



Questions?

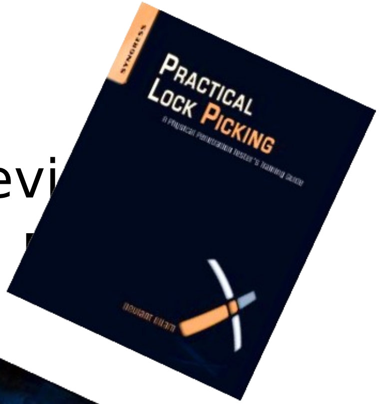


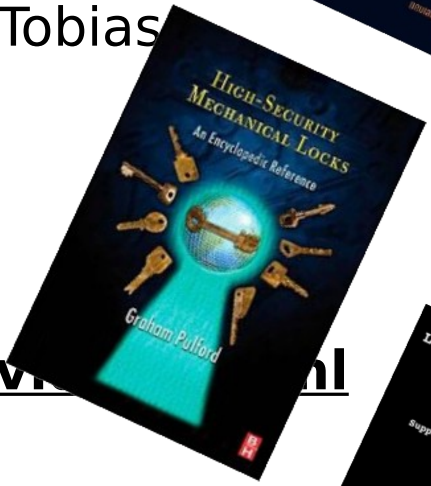
Resources for Learning More



Resources For Learning More

- Books
  - ***Practical Lock Picking & other books*** by Devi
  - ***High Security Mechanical Locks*** by Graham
  - ***Locks, Safes, & Security*** by Marc Tobias

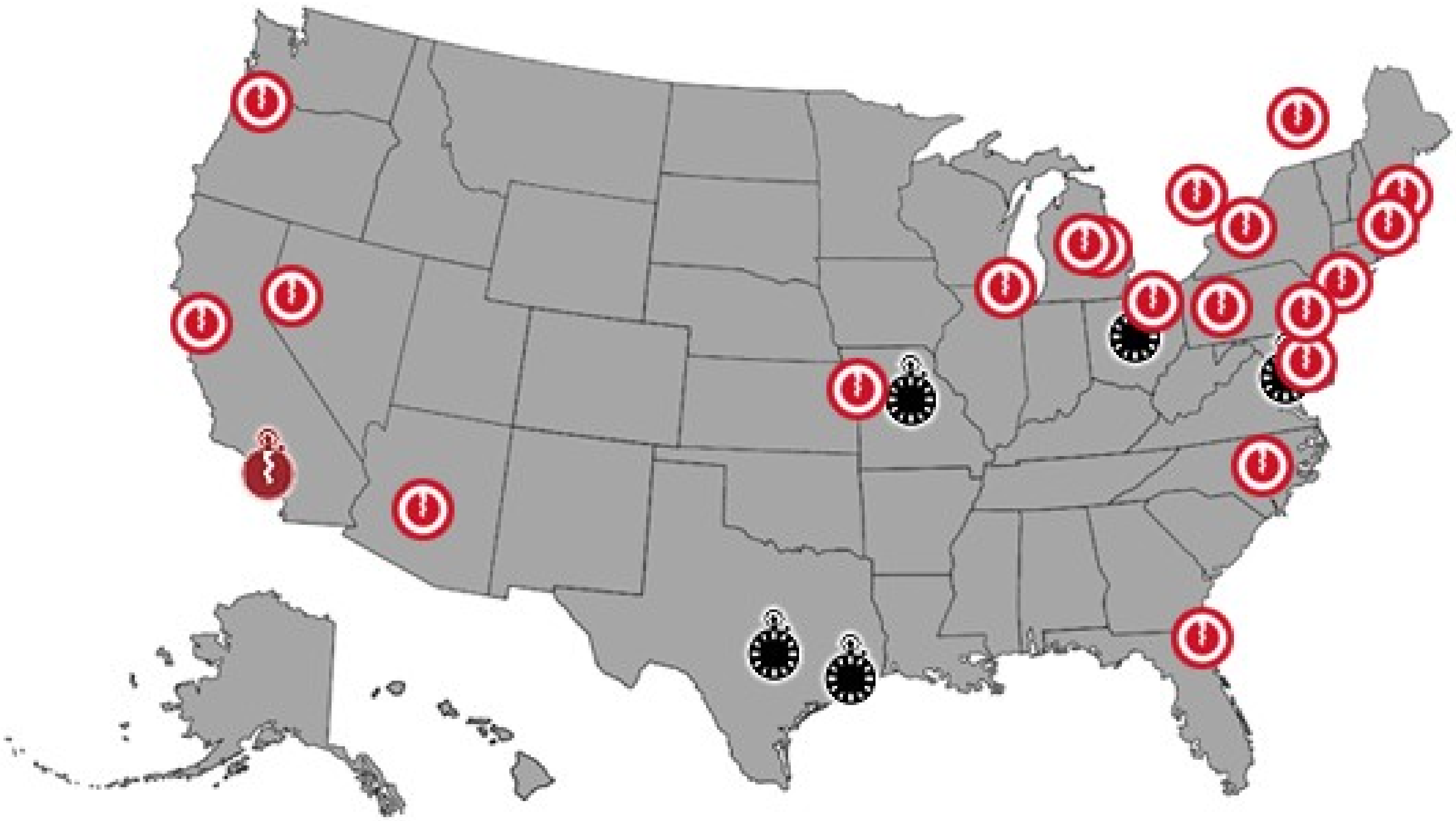






- Videos
  - **YouTube** & **Google**
  - **http://connect.waag.org/toool**
  - **http://deviating.net/lockpicking/vi nl**
- On The Web
  - **http://toool.us**
  - **http://blackbag.nl**
  - **http://toool.nl**
  - **http://deviating.net**

Resources For Learning More

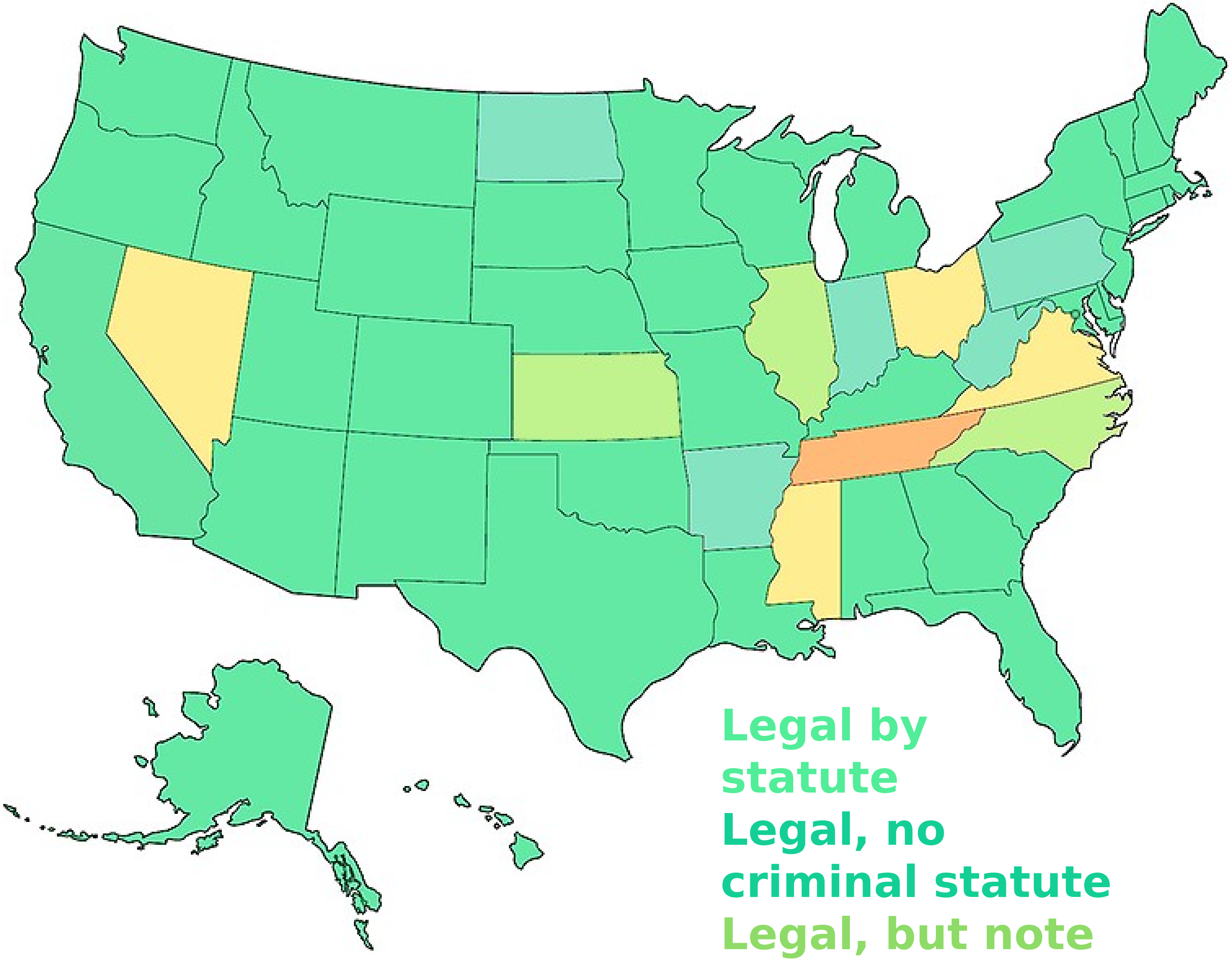


Legal Questions

- We are not lawyers
- Purchase/Shipping through mail
  - Lock manufacturer
  - Auto dealer
  - Law enforcement
  - Repo man
  - Bona fide locksmith
- Possession & use
  - Burglary tools statutes
  - During an illegal act



Legal Questions



Legal by statute
Legal, no criminal statute
Legal, but note other laws
Prima Facie

Acquiring Locks



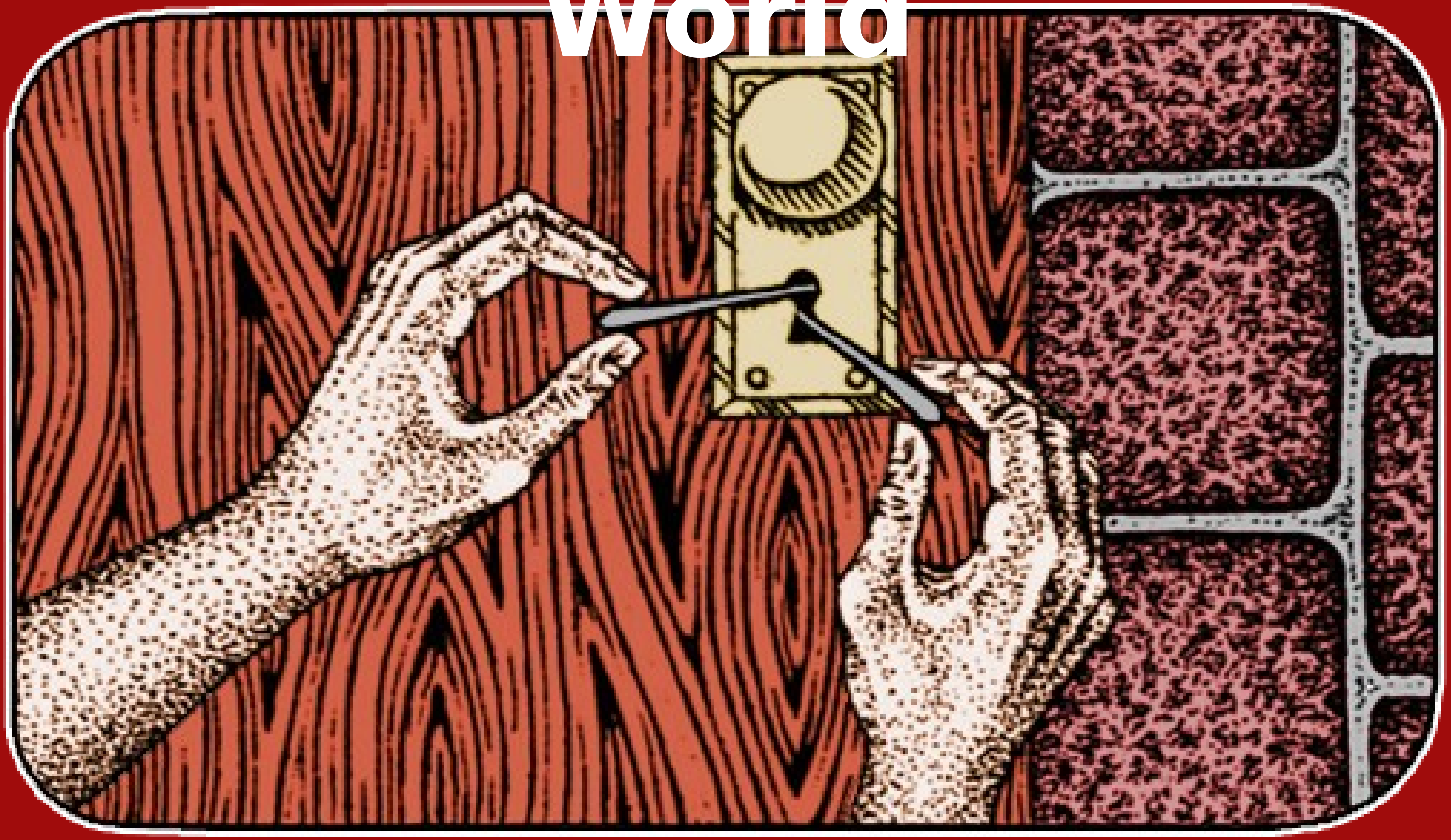


- Free
  - Basements, garages, yard sales
  - Ask neighbors, ask locksmiths
- For sale
  - Vary your sources
  - Hardware store vs. eBay
- Specialized
  - Progressive kits
  - Ultimate practice lock





Security in the Real World



Security in the Real World



Security in the Real World





Security in the Real World





Security in the Real World

- Technical Finesse or Brut
  - $100 lock in a $10 door?
- Doors
  - Solid core, heavy hinge
  - Anti-thrust bolts and latch
- Windows
  - Shatterproof film
  - Vulnerable to lifting? (slidir



Security in the Real World

Lockpicking

Quick & Dirty → ***guard against these attacks***

Covert & High-Tech

What People Think About Lockpickers...



Some People Think We Are Shady…



...But We Are Regular Folks



Young and Old...



...Men and Women



We Like Working With Our Hands...



...And Learning New Things



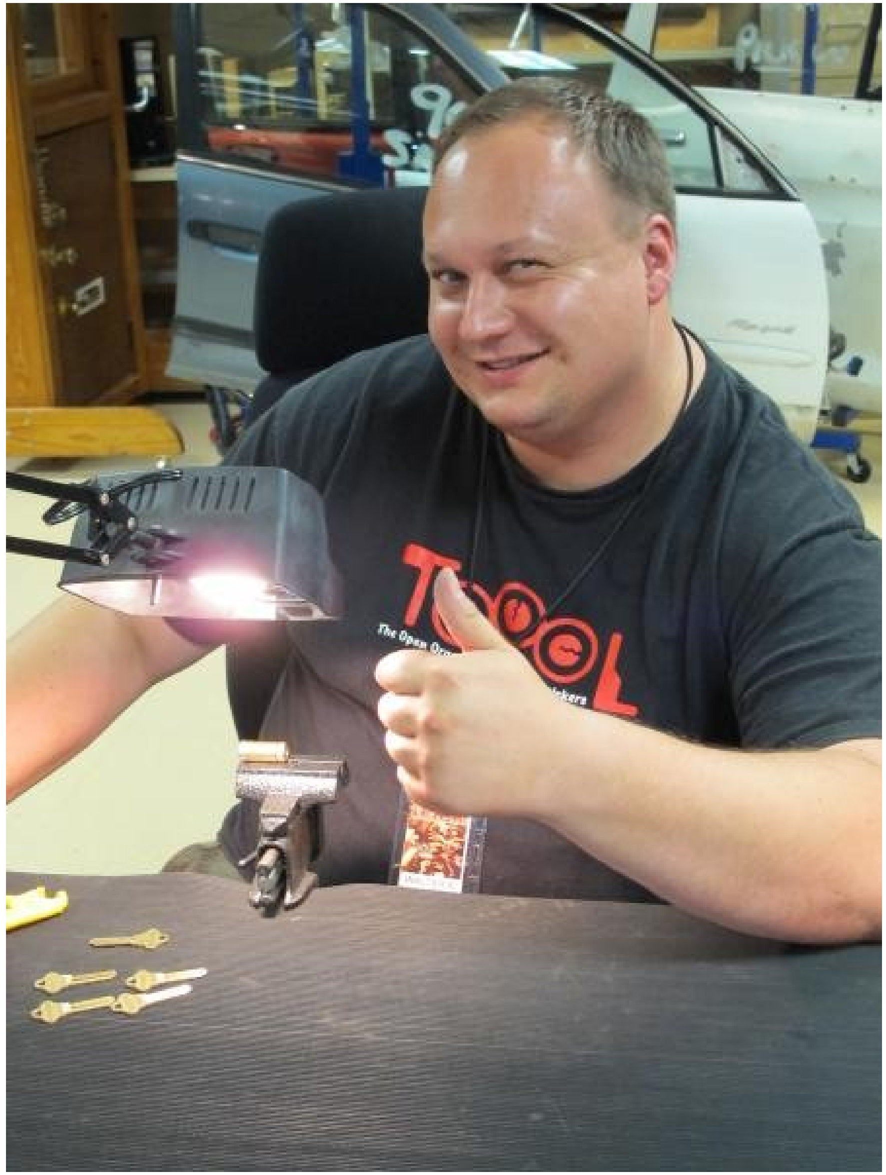
It's Healthy Competition



Where The Fastest Time Wins



Thank You For Listening



Thank You Very Much

The Open Organisation Of Lockpickers

http://toool.us

info@toool.us

